ABSTRACT

Clinical learning experiences are an essential part of nurse education programs. Numerous approaches to clinical education and student supervision exist. The aim of this integrative review was to explore how studies have compared or contrasted different models of undergraduate nurse clinical education. A search of eight databases was undertaken to identify peer-reviewed literature published between 2006-2015. Eighteen studies met the inclusion criteria. A diverse range of methodologies and data collection methods were represented, which primarily explored student experiences or perceptions. The main models of undergraduate nurse clinical education identified were: traditional or clinical facilitator model; the preceptorship or mentoring model; and the collaborative education unit model in addition to several novel alternatives. Various limitations and strengths were identified for each model with no single optimal model evident. Thematic synthesis identified four common elements across the models: the centrality of relationships; the need for consistency and continuity; the potential for variety of models; and the viability/ sustainability of the model. The results indicate that effective implementation and key elements within a model may be more important than the overarching concept of any given model. Further research is warranted to achieve an agreed taxonomy and relate model elements to professional competence.

Highlights

- There is no single ideal undergraduate/pre-licensure nurse clinical education model.

- The importance of interpersonal relationships across education models.

- Effective implementation and support of a given model are central for success.

INTRODUCTION

Clinical learning experiences are vital components of undergraduate or pre-licensure nurse education programs (Mannix et al., 2006). Nursing students acquire the skills, knowledge and attitudes necessary to enter the workforce through episodes of supervised practice. These experiences are significant in student progression, attrition and future employment decisions (Eick et al., 2012; Hamshire et al., 2012).

Global demand for new nurses to replace an aging workforce and supply the growing healthcare sector is placing unprecedented demand on sourcing clinical learning experiences. Concurrently, the introduction of unregistered healthcare workers' roles results in fewer registered nurses to supervise students (Hasson et al., 2013). Hence, there is re-vitalised interest in determining effective, sustainable options for clinical learning experiences and student supervision (Cross, 2009; Jackson and Watson, 2011). When clinical education is being increasingly scrutinised, exploring the evaluation of clinical education models is opportune (Willis, 2012).

Various approaches exist for provision of clinical learning experiences. There are multiple practice education or supervision models (Budgen and Gamroth, 2008; HWA, 2012) and the wide-range of clinical settings, patients, staff and supervisors each student encounters, all influence learning opportunities (Papp et al. 2003). Further compounding this diversity is a lack of unified terminology, making it challenging to compare and contrast differing clinical education models.

Enhanced understanding of the elements contributing to positive learning experiences is needed to best prepare students for the challenges of the health care workforce. Factors known to promote quality learning experiences for students include feeling that they are welcome, they belong, are valued as learners and can contribute to the healthcare team (Bradbury-Jones et al., 2007; Levett-Jones et al., 2007). Also, crucial is the development of supportive relationships between students, staff and supervisors (Myall et al., 2008; Saarikoski et al., 2002). Further key elements are sufficient learning opportunities, adequate student and supervisor preparation and sufficient support for supervisors (Courtney-Pratt et al., 2012).

Despite this awareness, quality clinical experiences do not always eventuate (Brown et al., 2011; Nielsen et al., 2013; Willis, 2012). Poor quality placements and unsatisfactory learning experiences are reported (Andrews et al., 2006; Brown et al., 2011; Ip and Chan, 2005) and may influence attrition from undergraduate nurse

education programs (Crombie et al., 2013; Eick et al., 2012). This review sought to identify if there was an optimal model of clinical education and/or student supervision to maximise learning outcomes. In addition, exploration of the methodological approaches to evaluating differing models in the included studies may inform future scholarship in this area.

AIM

The overall aim of this integrative review was to identify, describe and critically review studies that from the student perspective compared or contrasted clinical education models, including models of student supervision, within undergraduate nursing programs. The two main objectives of the review were to:

- Describe the methodological approaches taken in each study and consider if any challenges were encountered.

- Integrate the findings from the studies to inform our understanding of undergraduate nurse clinical education and establish if an optimal model(s) emerged.

## METHODS

Search methods

An integrative review using a systematic approach was employed. This review method supports simultaneous inclusion and examination of "diverse methodologies" generating a comprehensive approach to address the objectives of this review (Whittemore and Knafl, 2005, p.547). The literature search was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis checklist - PRISMA (Moher et al., 2009). Eight electronic databases were searched: Academic Search Complete, CINAHL, Medline Ovid, ProQuest Health and Medical, Scopus, PsychInfo plus the Joanna Briggs Institute EBP Database and Cochrane Library. Hand searching of nurse education journals and references lists of included papers was undertaken. The search terms were: clinical education, practice education, practice learning, clinical learning environment and undergraduate, student, pre-registration and model/models, nurs*, nursing, nurse. In order to capture studies investigating contemporary curricula the search was limited to the last 10 years, Jan 2006-Dec 2015. Inclusion criteria were: 1) English language; 2) peer-reviewed; 3) compared models of undergraduate clinical

education/student supervision; and 4) participants were preparatory nurse education program students. Papers excluded: 1) editorials, opinion pieces, conference abstracts; 2) review papers; or 3) non-English language.

Search outcome

Figure 1. Provides the process to reduce and evaluate papers. Upon full paper review, 36 papers were eliminated as indicated in Table 1.

Figure 1: Literature review flow chart
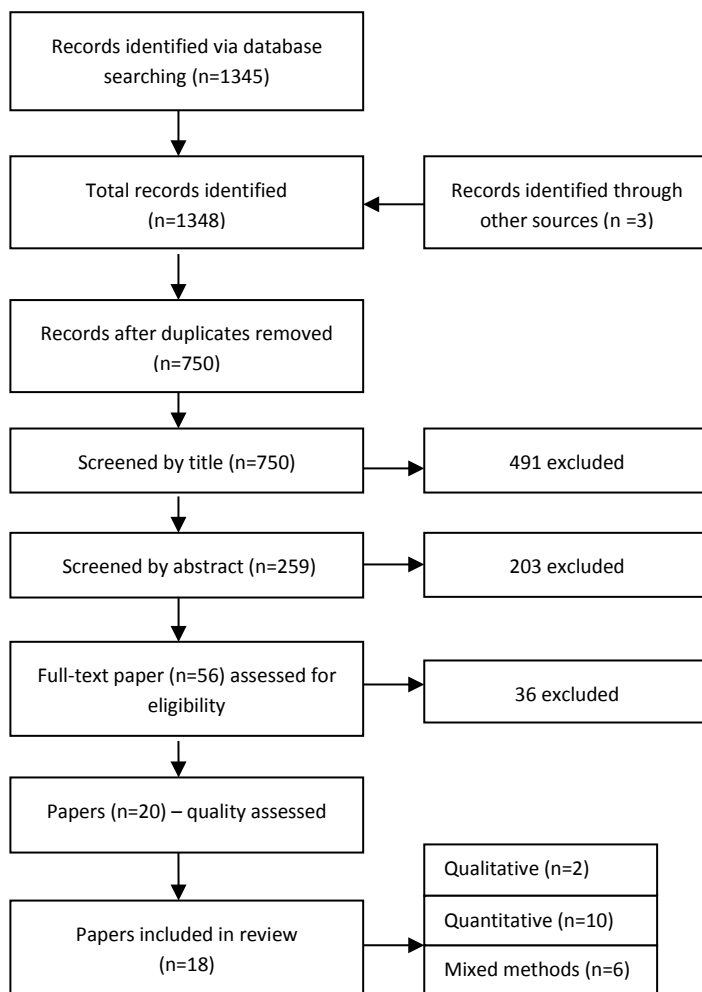
Table 1: Reasons for article exclusion

Reason	Number
Focus on one model and/or no specific intent to compare/contrast models	18
Papers are descriptive, implementation or non-research based paper	9

Not specifically related to undergraduate clinical education/supervision models	5
Participants are preceptors, education/clinical staff, recent graduates	2
Mentors' views of student supervision	1
Administrative/support systems for supervisors	1

Quality appraisal

Twenty papers were appraised using a framework supporting quality assessment across various methodologies (Hawker et al., 2002). Evaluation included, determining the congruency between aim and methodology, appraising the data analysis, presentation of findings, discussion and ethical considerations. Neither sample size nor population was appraised given their diversity. Two studies were excluded. The first (Moscato et al. 2007) presented an informative, yet descriptive account of the implementation of a clinical education model. The second, (Hendricks et al. 2013) lacked methodological detail, such as the recruitment processes. The final review comprised 18 studies (Table 2).

Data extraction and synthesis

A two phase data extraction process was undertaken. Firstly a matrix was created to collate the various study designs, methods, objectives and study populations in order to describe the studies in the review. Second, the findings, identified in each paper were extracted and organised under the model of clinical education or student supervision the finding was attributed to. These data were then coded inductively into categories as described by Miles et al (2015) that transcended the models of education or supervision. Data comparison then followed an iterative process to identify potential patterns, themes or relationships across the data (Whittemore and Knafl, 2005). Initial themes were reviewed and refined to capture the essence of each theme, which was then defined and named (Braun and Clarke 2006).

RESULTS

The results are presented in three sections. 1) the characteristics of the studies (Table 2); 2) a summary of findings from the studies, tabulated under broad clinical education/supervision model headings; and 3) findings from this review - the emergent themes which transcended the models under investigation.

The characteristics of the studies

Overview of included studies (Table 2)

The included studies are presented in Table 2. Seven papers originated from Australia; five from Queensland (Henderson et al., 2006a; Henderson et al., 2006b; Henderson et al., 2006c; Nash et al., 2009; Walker et al., 2013), and one each in New South Wales (Croxon and Maginnis, 2009), and Victoria (Newton et al., 2012). Of the Queensland papers, the three Henderson et al (2006) papers report findings from one larger project. The remaining studies were predominantly from the United States of America (Lovecchio et al., 2012; Mulready-Shick et al., 2013; Nishioka et al., 2014; Smyer et al.2015), Europe (Gustafsson et al., 2015; Hellström-Hyson et al., 2012; Roxburgh, 2014; Sundler et al., 2014; Warne et al., 2010) plus single studies from Iran (Parchebafieh et al 2014) and Saudi Arabia (Omer et al 2013).

The duration of clinical placements varied, ranging from 32 hours (Parchebafieh et al., 2014) to 42 weeks in Warne et al.'s (2010) study, with a mean of 6.4 weeks in the same study. Students at various stages of their progression are represented and clinical settings range from single site, single speciality studies (Hellström-Hyson et al., 2012) to single site, multiple specialities (Omer et al., 2013). The study approach could be considered 'direct' where participants experienced two or more models of clinical education/supervision, and draw from contrasting experiences or *'indirect'*, were each cohort of participants only experience one model under investigation.

Study design, study objectives and data collection methods

Study designs and data collection methods were predominantly survey/questionnaires with nine studies utilising established and validated tools. Five studies used the Clinical Learning Environment Inventory (CLEI) scale (Henderson et al., 2006a; Henderson et al., 2006b; Henderson et al., 2006c; Lovecchio et al., 2012; Newton et al., 2012). Developed by Chan (2002) the scale evaluates six domains; individualisation, innovation, satisfaction, involvement, personalisation and task orientation. Another scale, the Clinical Learning Environment Supervision and Nurse Teacher (CLES+T) scale was used in four studies (Gustafsson et al., 2015; Nishioka et al., 2014; Sundler et al., 2014; Warne et al., 2010). The original CLES scale (Saarikoski & Leino-Kilpi 2002) has five sub-dimensions; ward atmosphere, leadership style of the ward manager, premises of nursing

care, premises of learning on the ward and supervisory relationship. The dimension of nurse teacher in clinical practice (CLES+T) was added subsequently (Saarikoski et al., 2008).

The outcome measures centre on student experiences or perceptions of clinical education and consequently, this review presents a student-centric view. Seven studies (Croxon and Maginnis, 2009; Gustafsson et al., 2015; Hellström-Hyson et al., 2012; Omer et al., 2013; Parchebafieh et al., 2014; Sundler et al., 2014; Walker et al., 2013) focus on student experiences of supervision models. Whereas, Lovecchio et al. (2012), Newton et al. (2012), Nishioka et al. (2014), Roxburgh (2014) and Mulready-Shick et al. (2013) endeavour to explore the overall model of clinical education. Nash et al. (2009) specifically compares two forms of transition placement for final year students. Few studies endeavour to measure learning outcomes or competency attainment, however Mulready-Shick et al. (2013) includes student grades and exam results, Parchebafieh et al. (2014) consider knowledge acquisition and Smyer et al. (2015) outcome measure is academic performance.

Table 2. Included studies - presented alphabetically N=18

Author (Year)	Location	Study objective	Study design, participants, data	Methods	Direct or indirect [a]	Education/supervision models in the study[b]			
						Trad.	Prec.	CEU+	Other
Croxon & Maginnis 2009	Australia	Student experiences, achieving learning objectives, practicing clinical skills, availability/support by preceptor/ clinical facilitator.	Mixed methodology, 2nd year BN students (n=20). Single site.	Questionnaire Likert scale & open-ended questions.	Direct		Y		Cluster
Gustafsson et al 2015	Sweden	Student perceptions of nurse teacher role in 2 differing models.	Mixed methodology, 3rd year students (n=114), Model A – University nurse teacher n=53, Model B Clinical nurse teacher n=61. Interviews n=8.	Interviews and CLES+T (Clinical Learning Environment Supervision + Nurse Teacher scale).	Indirect				Y
Hellstrom-Hyson et al. 2012	Sweden	Student experiences 2 supervision models. Seven week traditional placement and 2 weeks student ward.	Descriptive qualitative study, final semester students (n=8).	Semi-structured interviews.	Direct	Y			Y
Henderson, Beattie et al. 2006	Australia	Student's perceptions of psycho-social characteristics of clinical learning environment in 2 models.	Survey design. 1st year students, n=33, traditional model and n=31, collaborative education unit (CEU) model.	Survey using Clinical Learning Environment Inventory (CLEI)	Indirect	Y		Y	
Henderson, Heel et al. 2006	Australia	Student's perceptions of psycho-social learning environments with 2 models.	Pre-test/post-test quasi experimental design. 2nd & 3rd years. Pre-test, n=370 traditional model. Post-test n= 287 traditional model and n= 83 CEU model.	Survey using CLEI.	Direct in the intervent-ion group	Y		Y	
Henderson, Twentyman et al. 2006	Australia	Student's perceptions of psycho-social characteristics of the clinical learning environment in 3 models.	Survey design. 1st, 2nd, 3rd year students, n=399. Year 1 n=34 traditional model, year 2 n=50 CEU and n=156 traditional, Year 3 n=64 CEU, n=79 traditional, & n=16 preceptorship	Survey using CLEI.	Indirect/ direct	Y	Y	Y	
Lovecchio et al. 2012	USA	Student's clinical experiences of 2 models -modified Dedicated Education Unit (DEU) with Clinical Liaison Nurse (CLN) & traditional model.	Quasi experiment: post-test only, non-equivalent control group. Junior & senior students. Convenience sample n=40 experimental group and n=14 traditional model.	Survey using CLEI.	Indirect	Y			CLN
Mulready-Shick et al. 2013	USA	Whether DEU model enhances educational quality i.e. experience, clinical learning and quality & safety competency.	Evaluation study, students randomly allocated to two models. Junior students - n=111 DEU and n=54 Traditional model.	Surveys - Student Evaluation of Clinical Education Environment (SECEE), 2 author developed surveys and student assessment data.	Indirect/ direct	Y		Y	
Nash et al. 2009	Australia	Experiences specific to transition, enhanced DEU model and traditional model.	Mixed methods, pre/post-test survey, final year students, n=92. Transition project model n=29, traditional model n=63. Focus groups n=15	Survey and focus groups.	Direct	Y	Y		

Author (Year)	Location	Study objective	Study design, participants, data	Methods	Direct or indirect [a]	Education/supervision models in the study[b]			
						Trad.	Prec.	CEU+	Other
Newton et al. 2012	Australia	Student experiences of 2 models. **MASH** a tertiary industry collaborative model, underpinned by preceptorship – students assigned home base, preceptor and constant clinical teacher.	Longitudinal quantitative study. 2nd & 3rd year students. Traditional model, clinical teacher n=194, traditional model, clinical teacher and preceptor n=165, & MASH model, clinical teacher and preceptor n=97.	Surveys - modified Clinical Learning Environment Inventory (CLEI). Component of larger study	Indirect		Y	Y	
Nishioka et al. 2014	USA	Student perceptions of 2 clinical education models	Repeated measures design, junior and senior baccalaureate & masters students. 6 focus groups: n=32. Surveys 473 students, returning 2-4 surveys (n=1053).	Focus groups and CLES+T (Clinical Learning Environment Supervision + Nurse Teacher scale).	Direct	Y			Y
Omer et al. 2013	Saudi Arabia	Student perceptions of two models of Preceptorship. **A** education employed preceptor, allocated 2 patients and 4 students. **B** ward nurse allocated 6-7 patients and 1 student.	A descriptive, exploratory, quantitative survey study. Model A n=57 in Adult wards, Model B n=53 on maternity and paediatrics	Surveys. Moore's Preceptorship Evaluation Survey (PES).	Indirect/ direct	Y	Y		
Parchebafieh et al. 2014	Iran	Effectiveness of the Clinical Teaching Associate (CTA) model (seconded ward RN supervising students) on clinical learning outcomes/student satisfaction.	Randomised controlled trial intervention and control groups. Year 3 students, n=28 CTA group & n=32 control group traditional model.	Student satisfaction questionnaire, written exam and summative assessment.		Y			CTA model
Roxburgh 2014	UK	Student perceptions of two Clinical Education Models.	Qualitative part of larger study. 2nd year students (n=10 adult program).	Focus groups.	Direct	Y			Hub & Spoke
Smyer et al 2015	USA	Differences in academic outcomes between students in a DEU and a traditional model	Longitudinal quasi-experimental repeated measure design, n=144. DEU n=90, traditional n=54.	The Health Education System Inc (HESI) exams – as baseline, , post clinical and on RN exit	Indirect	Y		Y	
Sundler et al. 2014	Sweden	Student experiences of clinical learning environment related to supervision	Mixed methods, cross sectional study. Final year students at 3 universities Convenience sample n= 185 students. Personal preceptor only n=54, several personal preceptors n=107 and patient room with numerous preceptors n=24	Survey CLES+T (Swedish version) + 1 open-ended question.	Indirect		Y		patient rooms
Walker et al. 2013	Australia	Student's perceptions of support two models of supervision	Cross sectional qualitative & quantitative study. Participants across three years BN (purposive sample n=159).	Author(s) developed online survey. 22 closed and 3 open items.	Indirect	Y	Y		
Warne et al. 2010	Multiple	Factors enhancing student experiences in clinical practice.	Quantitative Survey design. Pre-registration students at 7 polytechnics and 10 university colleges across nine countries (n=1903).	Survey. Validated CLES+T translated into various languages.	Indirect			Varied	

[a] 'direct' participants experience two or more models of clinical education/supervision, 'indirect', two cohorts of participants but each experienced only one model. [b] Education or supervision models included:
Trad = Traditional, Prec = Preceptorship or mentorship model – (NB: MASH = an acronym constructed from the names of the university and healthcare organization concerned), CEU+ = Collaborative Education Unit, Dedicated Education Unit models or other partnership based models, Other = models not in other categories.

Methodological challenges identified by study authors

All but four studies explicitly consider the challenges or limitations within their research. These comprise the numerous contextual variables, including: program duration, stage of student progression, variety of clinical settings, size of facility, supervisor experience, participants' prior experiences and personal characteristics. For example, Henderson et al. (2006c) question if the perceived 'excitement' of some wards influences student evaluation of their experience. Gustafsson et al. (2015) commented on the potential methodological constraints afforded by the many stakeholders involved in the provision of clinical education. Finally, small sample size overall and limited size of sub-groups in study populations was acknowledged by these authors Roxburgh (2014), Henderson et al. (2006c) & Lovecchio et al. (2012). Parchebafieh et al (2014) noted this as a potential impact on the statistical ability to differentiate between study groups in their randomised control trial.

Summary of findings from the studies, organised under broad clinical education/supervision model headings

Whilst terminology varied, clinical education or supervision models essentially fell into 3 main groups plus several novel alternatives as described below. Given local variation and contextual constraints, whilst these headings create a review framework, they are neither discrete nor exclusive. Tables 3a and 3b summarise the key findings utilising these models as a guide.

Terminology

The traditional model (or *block* or *rotational* placement model)

Centres on an education sector funded clinical facilitator (or *faculty*) as primary instructor for a group of students (n=8) across several wards/units, with students 'buddied' with registered nurses each day (Courtney-Pratt et al., 2012). As each placement may be in a different ward or facility this creates the rotational aspect. The cluster model variant, co-locates students on one ward/unit, affording increased clinical facilitator contact and peer support (Croxon and Maginnis, 2009).

The preceptorship model (or *mentorship* model)

The central tenet is a 1:1 supervisory relationship between student and health facility employed RN with Warne et al. (2010) observing trends towards such models. Preceptorship needs sufficient time and support to function and is impacted by staff shortages and busyness of the clinical setting (Walker et al., 2013). Gustafsson et al's. (2015) study focuses on the clinical teacher role in supporting the preceptorship model.

Collaborative models (or partnership models and Dedicated Education Units)

Underpinned by education industry collaboration, the majority or all student placements occur in one healthcare organisation and all staff engage in teaching and support. The implementation, constancy and sustainability of collaborative models require commitment from both parties. These models promote student welfare and individual learning (Henderson et al., 2006a; Henderson et al., 2006b; Henderson et al., 2006c) and generate 'real world' experiences for students.

Other models: Hub and Spoke model, student wards

In Hub and Spoke models, students belong to a 'hub' facility, with a series of 'spokes' experiences away from the main hub to develop understanding of the patient journey and care pathways (Roxburgh, 2014). In student ward models, students work in pairs and are jointly responsible for four patients (Hellstrom-Hyson et al., 2012). Under supervision, the model promotes collaboration, shared learning, continuity and patient engagement promoting greater independence in care delivery.

Tables 3a and 3b Summary of key findings

Table 3a: Findings related to the education or supervision models in each paper: Traditional and Collaborative Education Unit (CEU) models

Author (Year)	General findings	Specific Findings for Models Studied	
		Traditional	**Collaborative Education Units**
Henderson et al 2006a	Satisfaction high for both models.	Traditional	The Clinical Learning Environment inventory (CLEI) scores higher for collaborative model, only significant for the *personalisation*. Indicative of greater concern for student welfare/learning.
Henderson et al. 2006b	High levels of satisfaction in existence already, prior to the Introduction of a collaborative model.	Traditional	Collaborative model significant differences post-test for *student involvement, satisfaction, personalisation and task orientation.* Indicative student's unique learning needs addressed.
Lovecchio et al. 2012	Supportive of academic–practice partnerships for clinical learning	Traditional	Preference for Clinical Liaison Nurse model (CLN), statistically significant for the CLEI domains - *task orientation, satisfaction and individualisation*. Indicative benefit of students working with clinical staff plus faculty member.
Mulready-Shick et al. 2013	Both groups reported positive clinical experiences.	Traditional	DEU - significantly more positive learning experiences. Greater time spent in instructional activities, engaged with patient care and higher supervision quality. No impact overall on academic performance.
Nash et al. 2009	Scope for differing transition placements that suit student's learning style/needs.	Traditional -participants in either model more prepared to transition to RN role.	Trend towards students being more prepared but not significant. Benefits - experiencing the 'real world', a realistic shift pattern, team work & understanding of learning needs.
Newton et al. 2012	Student centredness key aspect of positive learning environments	Traditional	MASH model more positive for CLEI factor of *student centeredness* - highlights clinical teacher role important for continuity & relationship development.
Nishioka et al. 2014	Both models valued – learn discreet skills in traditional model and 'nursing' in DEU.	Traditional - quality of learning unpredictable, lack of time with faculty member, RN engagement with, operational and communication structures created barriers to effective education, ambiguous roles and unwelcoming wards.	Dedicated Education Unit – treated as a nurse not a student, less left to chance. Overall DEU's more conducive to learning – clearer leadership, welcoming atmosphere, individualisation and commitment to teaching.
Smyer 2015	No significant differences between DEU and Traditional model student scores on academic outcome measures (HESI scores)	Traditional	Dedicated Education Unit – students were considered not to be advantaged or disadvantaged academically by the implementation of the DEU model. Students only participated in the DEU model once so the authors question if differences may emerge with greater exposure.

Table 3b: Findings related to the education or supervision models in each paper: Traditional, and preceptorship and other alternate models

Author (Year)	General findings	Specific Findings for Models Studied	
		Traditional	**Other model(s)**
Croxon & Maginnis 2009	Both models supported 'hands on' practice & improved confidence.	May suit 'quiet' students. Preceptors require sufficient time for role.	**Cluster model:** increased availability and time from the clinical facilitator. Provides peer support.
Gustafsson et al 2015	The two models have different strengths.		**Preceptorship with either a University employed nurse teacher (UNT) OR a healthcare/clinical employed nurse teacher (CNT).** CNT's had greater ability linking theory to practice and their connectedness to clinical practice was an advantage. UNT's were considered knowledgeable and supportive especially if students had, for example, conflicts with their preceptor.
Hellstrom-Hyson et al. 2012		When 'buddied' with RN, students feel like a 'helper", unable to see overall context and lacked control over patient care.	**Student wards** - in pair's student collaborate to problem solve, organise care delivery and develop independence. Sense of continuity, engagement with patient care.
Henderson et al. 2006c	Final year students need longer placements and time for integration.	Traditional	**Preceptorship and Collaborative Education Unit:** Preceptorship preferred for enhanced student engagement (NB small sample size), mirroring the real expectations of the RN. CEU - higher CLEI scores but only significant for *personalisation*
Omer et al. 2013	Preparation required to move between varying supervision models.	Education provider funded Clinical Teaching Assistant (novel model here). Increased student satisfaction - improved teaching, role modelling and learning.	**A pre-existing preceptor model** - RN with full patient load supervising 1 student. Used in specialist areas e.g. Paediatrics. Limited supervisory support/student advocacy.
Parchebafieh et al. 2014	Overall satisfaction the same. Both effective enhancing knowledge/ clinical skills.	Traditional, students found the faculty member promoted linking theory to practice.	**Clinical teaching associate model** (adapted Preceptorship) effective for learning patient communication and skills. Potential for collaboration between education and health partners
Roxburgh 2014	Overall, preference for mixed model hub & spoke and traditional.	Rotational aspect creates anxiety, impacts student's belonging, acceptance as team member, and continuity in learning / development.	**Hub and Spoke model** - students had sense of belonging (aligned to, geographical location, role models and understanding care pathways). Developed lasting confidence.
Sundler et al. 2014	Overall, students had positive experiences of the clinical learning environments	CLES+T domains *supervisory relationship and pedagogical atmosphere* rated significantly greater for preceptorship model. Continuity/quality of supervision emphasized.	**Student training rooms** - dissatisfaction linked to multiple supervisors, issues with attitudes, continuity and 'pitching' supervision at the right level.
Walker et al. 2013	Quality of student support matters most, not the model. Both having merit.	Traditional group supervision – preferred. Participants significantly more likely to agree facilitators challenged thinking & problem solving via reflection, built on existing knowledge/skills.	**Preceptorship model** - potential for too many preceptors due to staff shortages and busyness of the clinical environment.
Warne et al. 2010	Participants in general were satisfied with their clinical placements.		**Multiple options** over 9 countries: Overall, students evaluated clinical experiences positively, particularly for CLES domains *supervisory relationships and pedagogical atmosphere*. Longer placements associated with greater satisfaction. Most important factor in satisfaction was supervisory relationships.

<u>Findings from this review: emergent themes which transcended the models under investigation.</u>

Despite the diverse approaches to clinical education or supervision within this review, several themes emerged, independent of any particular model.

The central role of interpersonal relationships

The significance of the interpersonal relationships influencing students' satisfaction within the clinical learning environment has been consistently demonstrated in the wider literature (Papastavrou et al. 2010, Saarikoski et al. 2008). In this review the importance of relationships was demonstrated across the various models studied. Warne et al.'s (2010) large scale study, amongst others, correlates the quality of the supervisory relationship and student satisfaction with clinical experiences. It may be expected that differing forms of supervisory relationship offer their own particular strengths and this was demonstrated in several studies. Gustafsson et al. (2015) examined student experiences of support received from nurse teachers and, when employed directly by the healthcare care facility, their connectedness to clinical practice ensured they are well informed about day-to-day 'in situ' practice which was considered an advantage. In collaborative models, ensuring student integration into the nursing team promotes student engagement with the learning environment (Henderson et al., 2006b; Lovecchio et al., 2012; Newton et al., 2012). This is also evident in Nishioka et al's (2014) study where the supervising RN's relationship with the facility, unit and patients promotes a positive, welcoming, personalised learning environment for students, with a consistent commitment to teaching. However, Hellstrom-Hyson et al. (2012 p.109) warn of a potential 'novelty' effect, which may influence finding related to relationships, were by early adopters of innovation are those inherently motivated to host and nurture students (Henderson et al., 2006b; Nishioka et al., 2014). Lovecchio et al. (2012 p.611) agree as settings adopting their Clinical Liaison Nurse model were "historically welcoming and helpful".

In traditional models, the clinical facilitator has a close relationship with the education provider and connection to curricula and students stage of development. Gustafsson et al. (2015) found university employed clinical teachers had sound theoretical knowledge and were able to provide 'neutral' support for students due to their indirect link to clinical areas. Walker et al. (2013) found facilitators can encourage problem solving, reflection and linking theory to practice, as did Parchebafieh et al. (2014) though there are

many contextual differences observed in the studies with the latter notably having the shortest duration of placement in the included studies.

Consistency and continuity in clinical education delivery

Nishioka et al. (2014) found models must be consistently defined and implemented to be effective, including establishing key roles and pathways for successful communication. In studies of collaborative models, consistency is important in the underlying philosophy which is evidenced in staff's consistent approach to welcoming, engaging and teaching students (Mulready-Shick et al., 2013; Nishioka et al., 2014).

A consistent supervisor or contact person who understands and monitors students' knowledge, abilities and skill level stimulates student learning and development (Newton et al., 2012; Sundler et al., 2014). In Newton et al.'s (2012) collaborative model, a clinical teacher provided a consistent point of contact resulting in statistically significantly CLEI scores for 'student centeredness' compared to the traditional model. In contrast, Roxburgh (2014, p43) found students in a traditional rotational model, describing "going backwards" or starting again as they moved through placements. Disrupted continuity resulting from multiple supervisors can be a notable cause for student dissatisfaction with clinical experiences (Sundler et al., 2014).

An important yet under explored aspect of clinical placement is placement duration. Warne et al. (2010) identified a link between the duration of clinical placements and greater student satisfaction. In longer placements students can develop effective, individualised supervisory relationship and therapeutic relationships with patients. In relation to placement duration, Roxburgh (2014) questions how much time is required to develop the student–supervisor relationship, so that an informed assessment of the student can take place. Hellstrom-Hyson et al. (2012) argue that to fully understand contextual continuity in care delivery students need to spend sufficient time with patients using appropriate periods of reflection. The study findings, though inconclusive as to what an optimal duration may be, do suggest that placements could potentially be of insufficient duration to achieve satisfactory outcomes and effective student assessment.

Opportunity for varied clinical education/supervision models

Many of the studies in this review where students were able to directly report their experiences of 2 or more models of clinical education, concluded the various models studied could offer differing advantages for

students and/or the clinical settings (Croxon and Maginnis, 2009; Henderson et al., 2006a; Nash et al., 2009; Nishioka et al., 2014; Roxburgh, 2014; Walker et al., 2013). Croxon and Maginnis (2009) found both preceptorship and cluster models both supported 'hands on' practice and developed student confidence. The Clinical Teaching Associate model promoted opportunities for patient communication and skill acquisition, with the traditional model linking theory to practice. The students in Roxburgh's (2014) study proposed a hybrid model: Hub and Spoke placements in year one and three and traditional model in year two.

A mix of junior and senior students in Nishioka et al's (2014) study were surveyed repeatedly over the duration of their study program and the findings identified that students' learning, developmental and support needs varied over time. Hence, traditional models may benefit beginning students to develop discrete skills under clinical facilitator guidance (Nishioka et al., 2014). In contrast, focussing on the transition into practice, Nash et al. (2009) found that the final year students in their study wanted to experience reality, rostered shifts, patient load and time management afforded in collaborative models. Nishioka et al. (2014) found DEU students describe learning 'nursing' as opposed to the perceived skill development focus of traditional models. Consideration of clinical settings is also required, as areas with limited capacity to host students, may find preceptorship style models most practical to implement (Henderson et al., 2006c). Omer et al. (2013) suggests differing models can co-exist; however, students need adequate preparation to be receptive to the benefits each offer.

Though a mixed clinical education model may be challenging to integrate into an overall program of nursing study such an approach may address individual learning styles, the needs of differing clinical areas and support student progression over time to achieve requisite outcomes. Smyer et al. (2015) compared academic outcome in students experiencing dedicated education unit (DEU) instead of a traditional model placement. Whilst no significant differences were found, they concede that as students only experienced a DEU once, there may not have been sufficient exposure to generate an effect so students were neither advantaged nor disadvantaged. . Nash et al.'s (2009) also found no significant difference in the models in their study but noted students electing to participate in an enhanced final transition placement where those more likely to access potentially enriching experiences. Individual preferred learning styles therefore require consideration when considering the outcomes in relation to preferred education models.

Ensuring viability

This theme considers whether a clinical education or supervision model can be implemented and supported as intended. This is illustrated by Walker et al. (2013) where the viability of a preceptorship model's 1:1, RN:student relationship can be undermined by staff shortages and busyness of the clinical unit, resulting in students having multiple preceptors. Similarly, Croxon and Maginnis (2009) found preference for their new cluster model, however, staff shortages and workload issues had prevented the pre-existing preceptor model's functional viability. Hence no matter how innovative and well received a new model may be initially evaluation over time becomes critical.

The willingness to embrace a new model is another issue. Nishioka et al. (2014) had ward personnel volunteer their wards for the new DEU format and suggest positive outcomes may not have been achieved if sites were involuntarily assigned the new model. Finally, students, supervisors and others must be adequately oriented and resourced to engage, as intended, to promote the viability of any model (Omer et al., 2013). This review focused on student perceptions which may be less sensitive to the logistics of implementation or viability, hence the views of clinical staff, academics and administrators would further inform future research.

DISCUSSION

The papers reviewed exemplify the diversity inherent within the clinically based component of undergraduate nurse education. This inherent variation creates challenges in studying this area, both within local and across international boundaries. As there is increasing emphasis on interprofessional education, defining nursing models and having an agreed taxonomy is important. The countries represented and the scope of inquiry is testament to worldwide interest in identifying effective approaches within clinical education and evaluating the impact of innovations. This review found that regardless of the model of clinical education or supervision there are factors which transcend the 'models' and contextual constraints. These were the centrality of professional relationships, need for consistency and continuity in clinical education delivery, the opportunity for varied clinical education/supervision models and ensuring the viability of the model to function as designed. These themes indicate that all models have favourable attributes that can promote learning in the clinical setting and which can promote effective implementation of existing models and design of novel models in the future.

The importance of relationships has been found in other studies, for example the pivotal role of the supervisory relationship for student satisfaction (Courtney-Pratt et al., 2012; Warne et al., 2010). Positive relationships promote student engagement, generate sufficient challenge for learning to occur and support constructive feedback (Grealish and Ranse, 2009). The notion of relationship extends to students having sufficient time to develop therapeutic interactions and shift from seeing a *patient and diagnosis*, through to understanding the *person* (James and Chapman, 2009). Several studies consider longer placements providing time for relationships to build, and create opportunities for students to integrate and contribute to the team resulting in greater satisfaction (Walker et al., 2013; Warne et al., 2010). Further, longer placements allow the student-supervisor relationship to develop sufficiently to offer an insightful and robust student assessment (Roxburgh 2014).

Whilst the student voice is dominant, the review has considerations for those charged with the design and governance of clinical education. There is scope for different models and approaches dependant on the clinical setting, individual needs of students, requirements over the program of study and to facilitate students experiences of nursing within the broader health care context. In Chesser-Smyth's (2005) study, the first year students equated nursing with 'doing' and skill acquisition and this review found this supported by traditional models. Whereas, models such as preceptorship (Henderson et al., 2006c) or student wards (Hellström-Hyson et al., 2012) promote independence, offering options to address the concern that final year students may lack preparation for the real world workplace (Allan et al., 2011). Roxburgh (2014) found students have insight into the evolution of their needs across time and what different models offer. Utilising a variety of models may support increased diversification and offer less traditional settings, community or primary health, ways to support students (Smith et al., 2013).

The success of any particular model depends on its reliability, validity, viability and sustainability. Hence, understanding elements in any model that drive success, such as adequately prepared supervisors or placement duration, may be key. There is value in exploring models of clinical education as a whole, but scope to examine specific components and identify what is effective and why, across models.

Limitations in this review

This review was restricted by specifically seeking studies evaluating more than one model of clinical education/supervision. Limiting the review to papers published in English, excludes insights from papers in other languages. The diversity in methods, and range of what, where and whom was studied in included papers, means the data cannot be aggregated or synthesized in a standard form. However, the four emergent themes have a level of generalizability within local contextual constraints.

Finally, the review selectively looked at students' perceptions and experiences and other stakeholder's views are not represented. The views of staff, supervisors and mentors may yield contrasting views, worthy of further exploration.

CONCLUSION

Implementation of the clinical curriculum is a critical yet challenging area of inquiry particularly in the contested environment of contemporary health care, making it a fruitful area of exploration and study. This integrative review sought to compare overarching models of undergraduate clinical education and rather than a single model being given preference over others, core elements emerged, that were common across multiple models.

There is scope to ask targeted questions, regardless of model, to further explore the nuances that impact student experiences of clinical education and acquisition of competencies. Establishing a consistent set of terms and definitions related to clinical education and student supervision will enhance the ability to explore differing models.

Seeking the best elements from many models of clinical education or approaches taken to student supervision will illuminate principles of best practice that can be applied across the diverse contexts of undergraduate clinical education and will continue to be an area for further research.

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