



Best practices of formal new graduate transition programs: An integrative review



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ABSTRACT

Objectives: The aim was to identify the best practices of formal new graduate nurse transition programs. This information would be useful for organizations in their support and development of formal transition programs for newly hired nurses.

Design: An integrative review of the nursing research literature (2000–2018).

Data sources: The literature search included PubMed (MEDLINE), CINAHL (Cumulative Index to Nursing and Allied Health Literature), and EMBASE (Excerpt Medica dataBASE). Studies that dealt with programs geared towards pre-registration nursing students were removed. At least two researchers evaluated the literature to determine if the article met the inclusion and exclusion criteria. The final number of articles included in this review is 76.

Review methods: Cooper's (1989) five-stage approach to integrative review guided the process: problem formulation, data collection, evaluation of data points, data analysis and interpretation, presentation of results. This approach was supplemented by the PRISMA guidelines for reporting systematic searches. **Results:** Selected studies (n=76) included a range of new graduate nurse program types. The literature was examined according to four major themes: education (pre-registration and practice), support/satisfaction, competency and critical thinking, and workplace environment. Common elements of programs were a specified resource person(s) for new graduates, mentorship, and peer support opportunities. Gaps were observed between pre-registration and new graduate nurse practice realities. A range of educational strategies were used but few were evaluated. Most programs staggered education over time but the limited evidence showed no difference in new graduate nurse transition or satisfaction. New graduate nurse support was an important emphasis of all programs with preceptors the most common form of support and with beginning evidence showing quality vs quantity in preceptor support. Strengthening the quality of preceptor support was evident across studies with the bundling of concurrent strategies found to be helpful. Competency and confidence were found to increase over time for new graduate nurses in transition programs. Workplace environments influenced new graduate nurse transition and organizational commitment.

Conclusions: The variable quality of evidence limits the conclusions that can be drawn. The strongest evidence consistently showed new graduate nurse programs enhanced critical thinking, competency and retention and there were advantages with use of bundled preceptor strategies to support new graduates.

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What is already known about the topic?

- Evidence of a theory-practice gap and a developmental lag between being a student and entering the workplace.

- Transition to practice associated with a reality shock.
- Programs as a whole and their constituent components have not been extensively studied in a systematic manner to determine their efficacy or cost-effectiveness.

What this paper adds

- Transition programs have a positive impact on new graduate nurse retention.

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- Transition programs, particularly those incorporating evidence-based components, have a positive influence on new graduate nurses' competence and confidence.
- The quality of preceptor support, such as the bundling of strategies, rather than quantity has advantages for new graduate nurses' transition experience.
- Despite growing evidence for the value of new graduate nurse programs, there is an ongoing need for more robust study designs.

1. Background

The demand for nurses has never been greater, accentuating the importance of recruiting and retaining new graduates. Yet, new graduate nurses continue to face a host of challenges when transitioning to the workforce. Acute care environments, where 67% to 85% of new nurses work, are particularly challenging because of greater patient acuity, rapid patient turnover, technological advancements, and demanding workloads (Hussein et al., 2017; Gilmour et al., 2017; Huntington et al., 2012; Parker et al., 2014; U.S. Department of Health and Human Services, 2010). These environmental and work management challenges are compounded by the nursing shortage, a product of retiring baby boomer nurses and new graduate nurses leaving the profession within the first 2 years of practice due to unreasonable workloads, lack of support from employers, unhealthy work environments and poor working relationships (Hunsberger et al., 2013).

The well-established theory-practice gap documented in the new graduate nurse transition literature has endured for four decades, with little having changed over time (Huston et al., 2018; Maben et al., 2006). There is recurring evidence of a lack of new graduate nurse practice readiness for their professional role, with a significant and problematic developmental lag between being a student and entering the workplace as a graduate nurse (Romyn et al., 2009; Wolff et al., 2010). Further, differing expectations between educational and practice stakeholders have been observed, often influenced by the historical and social context within which nursing education and professional practice are grounded (Wolff et al., 2010).

New nurses are expected to possess entry-level competencies at graduation yet research reveals gaps in their role-related knowledge, skills, and clinical judgment. Over two-thirds (65% to 76%) of new graduate nurses from across the United States did not meet expectations for entry-level clinical judgment (Del Bueno, 2005). Similarly, Swedish neophyte nurses were rated lowest in planning, prioritizing, informing and teaching co-workers and students (Lofmark et al., 2006) and have been observed to conduct near misses, omissions, and errors in the performance of clinical skills (Bjork and Kirkevold, 1999). More recent evidence indicates continuing gaps in entry-level competencies with new graduate nurses struggling in six areas: communication, leadership, conflict resolution, organization and prioritization, critical thinking and clinical reasoning, and stress management (Theisen and Sandau, 2013).

Internationally, there has been a burgeoning of new graduate nurse transition programs intended to support the development and integration of neophytes into the workplace. New graduate nurse transition support programs have been referenced in the literature using a variety of terms: transition to practice, nurse entry to practice, first year of clinical practice, residency, internship, new graduate nurse and early career nursing programs (Doughty et al., 2018). Across jurisdictions, professional, regulatory, and/or governmental bodies have recommended, even mandated such programs to target the challenges of professional workplace transition. Scotland's Flying Start (Banks et al., 2011)

and New Zealand's National Nurse Entry to Practice programs (Doughty et al., 2018; Ministry of Health, 2004), and the United Kingdom's preceptorship framework (Department of Health, 2010; Forde-Johnston, 2017; Marks-Maran et al., 2013) are now required for all new graduate nurses in these countries. Since 2002, the development of formal residency programs, although not mandated, has escalated in the United States dominated by Versant (Ulrich et al., 2010), the University Health System Consortium/American Association of Colleges of Nursing, and the National Council of State Boards of Nursing model for transition to practice (Transition to Practice™ regulatory model) (National Council of State Boards of Nursing, 2009; Spector and Echternacht, 2010). Similarly in some Canadian jurisdictions, provincial ministries of health have introduced funded new graduate nurse supernumerary positions for up to 6 months to assist with transition (Hunsberger et al., 2013).

Dating back to Kramer's (1974) seminal work, there is a large body of research on new graduate nurse transition programs (Anderson et al., 2012; Edwards et al., 2015; Letourneau and Fater, 2015; Missen et al., 2014; Mellor et al., 2017; Rush et al., 2013a) reporting benefits for both the novice nurse and their employing organization. The evidence indicates wide variation in program components, content, length, number, and type of clinical rotations, teaching and learning strategies, and use of theory in designing the program (Anderson et al., 2012; Rush et al., 2013a). Components generally included a combination of education, formal or informal preceptorships, mentorships, supernumerary time, and unit specific orientation. On the basis of their classic review of new graduate programs, Levett-Jones and FitzGerald (2005) concluded that both the programs as a whole and their constituent components have not been studied in a systematic, comprehensive or objective manner to determine their efficacy or cost-effectiveness. Despite the volume of work done in this area there has been little consensus regarding what constitutes best practice. Therefore, the purpose of this study was to review existing research literature to identify best practices of formal new graduate nurse transition programs.

2. Methodology

Cooper's (1989) five-stage approach guided this integrative review: problem formulation, data collection, evaluation of data points, data analysis and interpretation, and presentation of results. Problem formulation has been described in the background section.

2.1. Data collection

The search strategy combined two concepts: *new nurse graduates* and *transition programs*. These concepts were operationalized very broadly to capture as many relevant articles as possible. For instance, the term *transition programs* was searched by retrieving all articles that mentioned any of the following terms: transition or programs or orientation or preceptorship (see line 6 in the Appendix A for a comprehensive list). In accordance with the PRISMA Statement, a full electronic search history is presented in the Appendix A detailing all of the terms and limits used so that the search can be easily replicated (Moher et al., 2009). Library databases that were searched included Medline, Excerpt Medica data, and Cumulative Index to Nursing and Allied Health Literature. The overall review was limited to articles that were written in English, had an abstract, and were published between 2000 and 2018.

Results from all searches from the three database searches were loaded into RefWorks, a bibliographic management tool, for storage, organization, sharing, and deduplication. The searches

yielded a total of more than 6500 papers. After duplicates were removed 2154 papers were evaluated.

2.2. Evaluation of data points

The 2154 papers that were evaluated were screened against the inclusion and exclusion criteria. Articles were included if they met all of the following criteria: (a) based on empirical research; (b) included an abstract; (c) targeted new graduates within one year of graduation participating in a formal new graduate nurse transition program; (d) contained sufficient detail describing the formal new graduate nurse transition program; (e) focused on acute care settings; (f) published in English. Reviewers excluded articles for one or more of the following reasons: (a) focused on professional identity (e.g. burnout, etc.), (b) presented a review of the literature or editorial, or gray literature, (c) studied nurses in residential, rural or community settings, (d) included populations other than primarily newly graduated nurses, and (e) focused on nurses working primarily in specialty areas that typically provide advanced training.

Screening was performed independently by two research team members and any disagreements between them was resolved by a third researcher. This study selection process is represented graphically in Fig. 1.

2.3. Data analysis and interpretation

Data from the 76 articles included in this review were extracted to a standardized charting form. Using RefWorks, a bibliographic management tool, papers were categorized according to four major themes: Education (pre-registration and practice), Support/

Satisfaction, Competency and Critical Thinking and Workplace Environment. Papers were reviewed for study design, sample approach and size, program elements (e.g. orientation length, transition length, education, supports), and outcomes (e.g. competency, critical thinking). More detail on each transition program is provided in Table 1.

Each paper was scored for its level of evidence using an adaptation of Beck's (2001) scoring index. Four criteria were extracted from all of the papers: Study design (Quasi-experimental = 3 points; Longitudinal = 2 points; Descriptive and Qualitative = 1 point); sampling (random = 3 points; matched = 2 points; convenience = 1 point); sample size (greater than 100 = 3 points; 51–100 = 2 points; 0–50 = 1 point); and instrument psychometrics (addressed reliability and validity in current study = 3 points; addressed reliability or validity in current study = 2 points; mention of only previous reliability and/or validity = 1 point; no mention of reliability and validity = 0 points). The result was a level of evidence score specific to each article that ranged from 3 (lowest level) to 12 (highest level). Papers with levels of evidence scores from 9 to 12 were considered to be strong. The level of evidence score for each paper can be found in Table 1.

3. Presentation of results

Sample sizes of study populations researched in the papers reviewed ranged from 4 to 7907. The majority used descriptive/descriptive-correlational designs (n = 30), with qualitative (n = 15), mixed methods (n = 12), quasi-experimental (n = 9), longitudinal (n = 7), and true experimental (n = 3) designs also represented. The vast majority of the literature was of U.S. origin. The literature review revealed both generic transition programs (n = 21), and

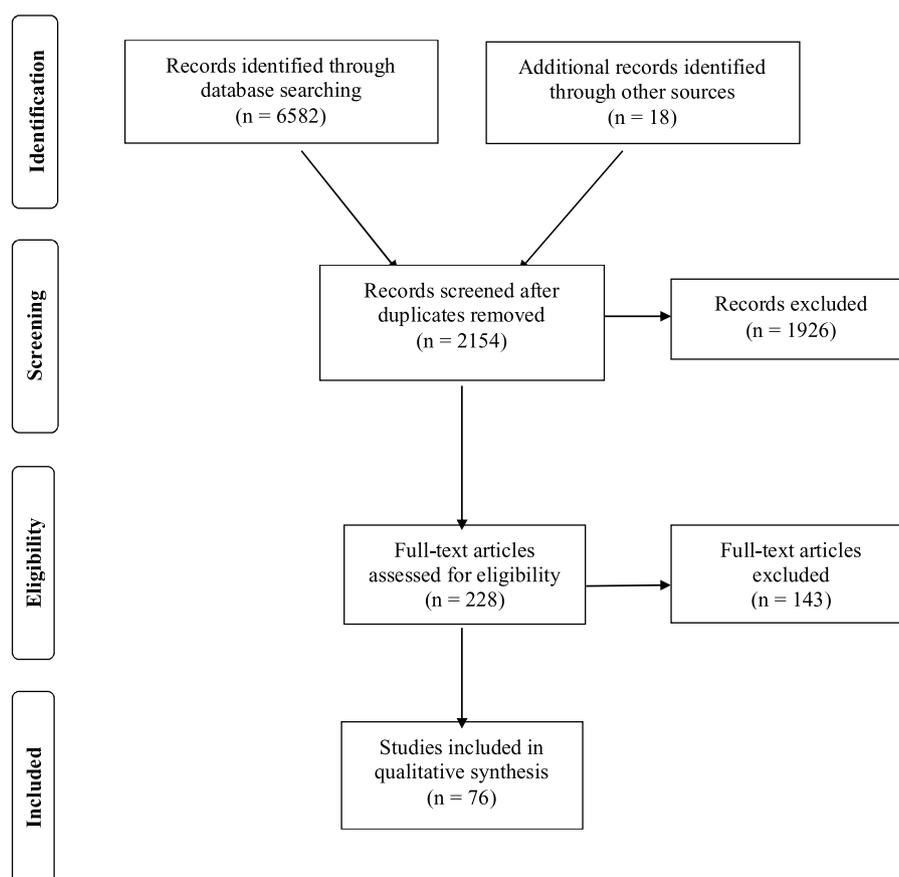


Fig. 1. Summary of literature search and study selection process. Adapted from: Moher D., Liberati A., Tetzlaff J., Altman D. G., The PRISMA Group, 2009. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. PLoS Medicine 6 (6), e1000097.

Table 1
Summary of studies.

| Study descriptors | | | | | Program elements | | | | Outcomes | | |
|---------------------------------------|----------------------------|---------------------------|----------------------------|--|---------------------------------|----------------------------------|--|---|---|------------|---|
| Authors | Level of evidence score/12 | Design | Sampling approach and size | Measures used and validity /reliability | Type of program | Transition program length (mons) | Unit orientation length | Type of supports provided | Competency and critical thinking | Confidence | Job Satisfaction |
| Adamack and Rush (2014) | 4 | Qualitative | Convenience; 121 | Focus groups and interviews | New Graduate Transition Program | 12 | Ranged from <2 weeks to > 4 weeks | Various: preceptor, mentor, transition program coordinators, clinical educators, unit staff | – | – | – |
| Al-Dossary et al. (2016) Saudi Arabia | 6 | Descriptive | Convenience; 98 | Clinical Leadership Survey; Cronbach's alpha reliability was $\alpha = .89$ (n = 98) | Residency Program | 6 to 12 | Had orientation but no length identified | – | Significant mean differences between residents and non-residents in overall clinical leadership skills. No difference between 6 and 12 month programs | – | – |
| Allan et al. (2017) UK | 4 | Ethnographic case study | Convenience; 83 | Participant observation and interviews | Preceptorship | – | – | Preceptors | – | – | – |
| Almada et al. (2004) US | 3 | Descriptive | Convenience; 40 | Survey addressed satisfaction, reasons the new graduate nurses may have considered for leaving, and feedback for possible improvements in the program. | Preceptorship Program | 6 | > 4 weeks, less than 3 months | Mentor for both preceptor and NG | – | – | High Satisfaction |
| Altier and Krsek (2006) US | 6 | Descriptive | Convenience; 111 | McCloskey-Mueller Satisfaction Survey | Residency | >6 | – | Resident Facilitator | – | – | No change |
| Anderson et al. (2009) US | 6 | Mixed Methods | Convenience; 90 | Halfer-Graf Job/Work Environment Nursing Satisfaction Survey; validity and reliability supported but not reported | Residency | >6 | – | – | Increased competence and competence | – | Satisfiers: Caring for patients, seeing positive patient results and teamwork |
| Ankers et al. (2018) Australia | 3 | Hermeneutic phenomenology | Convenience; 4 | Semi-structured interviews | Transition to Practice Program | 12 | – | Dedicated educators and support nurses | – | – | – |
| Baggot et al. (2005) US | 6 | Longitudinal | Convenience; 526 | Survey | Preceptorship | 6 | – | Preceptor | – | – | Increased satisfaction |
| Beecroft et al. (2008) US | 5 | Descriptive | Convenience; 88 | Satisfaction Survey | Residency | 4-6 | > 4 weeks, less than 3 months | Preceptors | – | – | Increased satisfaction with preceptorship |

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|--|----|--|---|---|---|---|---|--------------------------------------|---|---|---|
| Beecroft et al. (2006) US | 6 | Descriptive | Convenience; 318 | Survey related to residency and specifically mentoring experience | Residency | 4-6 | - | Mentors | - | - | Satisfaction with mentorship (44%); dissatisfaction with mentorship (19%) |
| Beyea et al. (2007) | 4 | Longitudinal | Convenience; 6-27 | - | Residency | 0-3 | - | - | Increased | - | - |
| Blanzola et al. (2004) | 5 | Quasi-experimental | No mention; 8 | Performance on Organizational Attributes; Cronbach's alpha reliability was $\alpha = .84$ | Internship | 4-6 | < 4 weeks | Mentor | Increased | - | - |
| Blegen et al. (2015) US | 10 | Longitudinal, randomized, multisite design | Hospitals assigned to either control or experiment group using stratified random method; 1416 | Modified versions of the Quality and Safety Education for Nurses Tool, the Nursing Executive Center Critical Thinking Tool, and the Preceptor Evaluation Survey; subscale Cronbach's alphas were .86-.97. | NCSBN Transition to Practice Program | 12 | Had orientation but length not reported | Preceptors | - | - | - |
| Bratt and Felzer (2012) US | 8 | Longitudinal correlational | Convenience; 468 | Nursing Job Satisfaction Scale, Job Stress Scale, Clinical Decision Making in Nursing Scale, Modified 6-D Scale of Nursing Performance; Cronbach's alpha for total scales were .82 to .95 and the subscales were .64 to .90 | Nurse Residency | 12 | Not specified | Mentors, coaches | - | - | - |
| Bratt (2009) | 5 | Descriptive | Convenience; 1500 | - | Nurse Residency | 15-18 | <4 weeks | Preceptor, Clinical Coach | Increased | - | - |
| Casey et al. (2004) US | 6 | Longitudinal | Convenience; 270 | Casey-Fink Graduate Nurse Experience Survey; Cronbach's alpha = .78 | New Graduate Orientation Program | 6-12 weeks (for/not for profit hospitals); 12-24 weeks at academic teaching hospitals | - | Resident Facilitator | Increased | Increased confidence between 6 mos and 1 year of practice | Increased |
| Clark and Holmes (2007) UK | 5 | Qualitative | Convenience; 110 | Focus Groups; Interviews | Development Program | - | - | Preceptor | Lacked competence | Increased confidence after 6 mos | - |
| Cubit and Lopez (2012) Australia | 3 | Qualitative descriptive | Convenience; 10 | Focus groups | Graduate Nurse Program | 12 | - | Preceptors | - | - | - |
| Dougherty et al. (2018) New Zealand | 3 | Qualitative exploratory | Convenience; 16 | Semi-structured interviews & focus groups | National Nurse Entry to Practice Program | 12 | - | Nurse entry to practice coordinators | - | - | - |
| Dyess and Parker (2012) US | 5 | Mixed methods, pre-post evaluation design | Convenience; 109 | Nursing Evaluation Competency Assessment Instrument, Student leadership Practices Inventory; reported original tools internal reliability and predictive validity | Novice Nurse Leadership Institute Program | 10 | - | - | Improvements in various leadership competencies (e.g., coordination, ability to lead) | - | - |

Table 1 (Continued)

| Study descriptors | | | | | Program elements | | | | Outcomes | | |
|--|----------------------------|-------------------------------------|----------------------------|--|--------------------------------------|----------------------------------|--|---------------------------|----------------------------------|---|--|
| Authors | Level of evidence score/12 | Design | Sampling approach and size | Measures used and validity /reliability | Type of program | Transition program length (mons) | Unit orientation length | Type of supports provided | Competency and critical thinking | Confidence | Job Satisfaction |
| Ellerton and Gregor (2003) Canada | 3 | Descriptive | Convenience; 11 | Interviews | Orientation Program | 12 | Ranged from no classroom instruction to 2 weeks of classroom work; from 3-12 precepted clinical shifts with an experienced/ Senior nurse | – | – | – | – |
| Figueroa et al. (2013) US | 5 | Mixed methods | Convenience; 208 | Focus groups; unnamed survey instrument; no R&V reported | Married State Preceptor-ship Program | 18 weeks | – | Preceptors | – | – | – |
| Figueroa et al. (2016) US | 4 | Mixed methods | Convenience; 55 | Focus groups & unnamed survey; no R&V reported | Married State Preceptor-ship Program | 18 weeks | – | Preceptors | – | Preceptors perceived confidence as increased. | – |
| Fink et al. (2008) | 7 | Longitudinal | Convenience; 434 1058? | Casey-Fink Graduate Nurse Experience Survey; Cronbach's alpha = .89; open-ended questions | Residency | 12 | – | Resident Facilitator | Increased | – | – |
| Forde-Johnston (2017) UK | 4 | Mixed methods | Convenience; 54 | Focus groups, one-to-one nurse development reviews & two unnamed questionnaires; no R&V reported | Preceptorship Program | 12 | – | Preceptors | – | Findings suggested that the program increased confidence in practice. | – |
| Forneris and Peden-McAlpine (2009) US | 3 | Qualitative Instrumental Case Study | Convenience; 12 | Interviews | Preceptor Coaching | 3 | – | Preceptor | Increased critical thinking | – | – |
| Fox (2010) US | 3 | Descriptive | Convenience; 24 | Pre-post evaluation survey | Mentor Program | 12 | – | Mentor | – | – | Increased satisfaction |
| Gavlak (2007) | 5 | Descriptive | Convenience; 126 | End of program evaluation | Orientation Program | 3 | 3 | Mentor | – | – | – |
| Goode et al. (2009) US | 8 | Longitudinal | Convenience; 655 | Casey Fink Graduate Nurse Experience Survey ($\alpha = 0.89$), the Gerber Control Over Nursing Practice Scale (CONP) ($\alpha = .96$), McCloskey Mueller RN Job Satisfaction Scale (MMSS) ($\alpha = .82$), and a Program Evaluation Scale | Residency | 12 | – | Resident Facilitator | Increased competency | – | Satisfaction – high at beginning, decrease by 6 months and increased by end of 12 months (V pattern) |

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|--|---|--|-------------------------------------|--|---|---------|--|--|---|---|---|
| Guay et al. (2016) Canada | 3 | Constructivist grounded theory | Convenience; 10 | Semi-structured interviews | New Graduate Guarantee Orientation Program (Extended Orientation) | - | - | Preceptors | - | - | - |
| Haggerty et al. (2013) New Zealand | 4 | Mixed methods | Convenience; 1226 | Survey (developed by Ministry of Health), interviews & focus groups; not explicitly mentioned – “to ensure validity and reliability of the evaluation mixed methods were used to gather data from a variety of sources” | Nurse Entry to Practice Program | 12 | - | Preceptors | - | Increased | - |
| Hayes and Scott (2007) US | 3 | Descriptive | Convenience | Evaluation survey | Transitions to Professional Practice Program | 5 weeks | | Mentor | | Increased | - |
| Henderson et al. (2015) Australia | 7 | Mixed methods | Convenience; 78 | Clinical Learning Organizational Culture Survey with Cronbach alphas >.70 for 5 subscales | Hospital Graduate Program | 12 | 4 days of paid hospital orientation then 2 weeks of supernumerary time | Preceptors, Program Coordinator and Clinical Facilitator | | Increased | - |
| Hunsberger et al. (2013) Canada | 6 | Mixed methods Longitudinal Trend Study | Convenience; 4382 (3813 – NGS only) | Surveys, semi-structured interviews & focus groups; pilot tested surveys for face and content validity | Extended Orientation and Mentorship Program | 3-6 | - | Preceptors and mentors. 3-6 month supernumerary positions receive professional guidance from the same expert nurse over time | - | Increased as noted by employers and new graduates. | - |
| Hussein et al. (2017) Australia | 4 | Convergent mixed methods; baseline with follow-up survey | Convenience; 140 | Manchester Clinical Supervision Scale (MCSS-26), Practice Environment Scale Australia (PES-AUS) with free text responses; no R&V reported | Transitional Support Program | 12 | 6.5 supernumerary orientation days | Clinical nurse educators, nurse unit managers, clinical nurse specialists, RNs | - | No change in confidence between 8-10 weeks and 10-12 months | - |
| Joswiak (2018) US | 5 | Qualitative | Convenience; 188 | Surveys; no R&V reported | Tiered Orientation Program | - | - | Preceptors | - | Increased confidence | - |
| Keller et al. (2006) US | 3 | Descriptive | Convenience; 72 | Repeated Surveys: Job Satisfaction; Employee Engagement; not described | Residency | 12 | - | - | - | - | - |
| Komararat and Oumtane (2009) Thailand | 7 | Quasi-experimental | Convenience; 19 | Mentorship Knowledge Scale (Kuder-Richardson reliability of 1); Nursing Competence Scale ($\alpha = .96$). | Mentorship | 1 | | Mentor | Increased | - | - |
| Kowalski and Cross (2010) US | 8 | Longitudinal | Convenience; 55 | Preceptor Evaluation of Resident form (No R&V); Pagana's Clinical Stress Questionnaire ($\alpha = .84/.85$ and construct/concurrent validity); state-Trait Anxiety Inventory for Adults ($\alpha = .90$ and contrasted groups validity); Casey-Fink Graduate Nurse Experience Survey ($\alpha = .71-.90$). | Residency | 12 | - | Preceptor Became Mentor | Increased competency and critical thinking (NS) | - | - |

Table 1 (Continued)

| Study descriptors | | | | | Program elements | | | | Outcomes | | |
|-----------------------------|----------------------------|--------------------|---|---|--|---|---|---|--|----------------------------------|------------------------|
| Authors | Level of evidence score/12 | Design | Sampling approach and size | Measures used and validity /reliability | Type of program | Transition program length (mons) | Unit orientation length | Type of supports provided | Competency and critical thinking | Confidence | Job Satisfaction |
| Kramer et al. (2011) US | 7 | Longitudinal | Convenience: 371 | Anticipated Professional-Practice Environment scales, Perceived Professional-Practice Environment and Nurse-Assessed Quality of Patient Care surveys; R&V not reported | Residency | 12 | – | Preceptor | – | – | – |
| Kramer et al. (2013) US | 5 | Qualitative | Convenience; 907 | Interview and participant observation | Residency Program | Varied across the 20 site-visited hospitals | Varied | Clinical coaches, mentors | Competencies (e.g., delegation and prioritization) developed with transition plus integration more than transition-stage-only programs | Feedback boosted self-confidence | – |
| Krugman et al. (2006) US | 4 | Descriptive | – | McCloskey Mueller Satisfaction Scale ($\alpha = .82$); Gerber Control Over Practice Scale ($\alpha = .96$); Casey-Fink Graduate Nurse Experience Survey ($\alpha = .82$); Investigator Developed Residency Evaluation Form | Residency Program | 12 | – | Preceptor in 1 st 6 months during orientation and Resident Facilitator in 2 nd 6 months | Increased competence | – | Increased satisfaction |
| Lee et al. (2009) | 6 | Quasi-experimental | Convenience: 58 (preceptor + new graduate nurses) | Satisfaction of preceptor's teaching behaviour ($\alpha = .90$ and CVI = .86); Preceptor's Perception Scale ($\alpha = .89$; CVI = .87) | Preceptorship | 3 | – | Preceptor | Increased competence (e.g., decreased med errors, falls) | – | – |
| Leigh et al. (2005) UK | 5 | Quasi-experimental | Convenience; 34 | Pre-post program questionnaire | Preceptorship Program | 6 | 3-week supernumerary orientation program | Preceptor/Mentor | Increased | – | – |
| Li and Kenward (2006) | 5 | Descriptive | Convenience; 7497 | – | – | – | – | – | – | – | – |
| Marcum, and West (2004) | 5 | Quasi-experimental | Convenience; 20 | Performance Based Development System (PBDS), Weekly Preceptor Evaluation Form, Unit Orientation Plan, RN Competency Assessment Tool, Summation Forum Between Leadership and Participants, the American Society of Training and Development Evaluation Tool (ASTD, 2000), and the Professional Judgment Rating Form: Novice/Internship Level Critical Thinking Abilities and Habits of Mind. Previous R&V reported | Structured Progressive Orientation Program | 13 Weeks | 2.5 Weeks of General Hospital Orientation | Mentor | Increased critical thinking | – | – |

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|-------------------------------------|---|----------------------------|------------------|---|---|----------|---|--|---|--|-----------|
| Marks-Marano et al. (2013) UK | 4 | Mixed methods | Convenience; 90 | Reflective journals & personal audio recordings, questionnaires; Cronbach's alpha obtained but not reported | Preceptorship Program | - | - | Preceptors | 76% indicated that preceptorship had a positive impact on helping them develop high standards of practice | 78% said they had increased confidence | - |
| McKenna and Newton (2008) Australia | 3 | Qualitative - Longitudinal | Convenience; 24 | Focus Groups | Graduate nurse program | 12 | - | - | Increased confidence | Increased | Increased |
| Mills and Mullins (2008) | 3 | Descriptive | Convenience | - | Mentorship Project | - | - | Mentor | Increased confidence | - | Increased |
| Moore and Cagle (2012) US | 3 | Qualitative | Convenience; 7 | Interviews | Internship Program (they use term interchangeably with residency program) | - | - | Preceptors | - | - | - |
| Murphy et al. (2004) Canada | 5 | Descriptive | Convenience; 48 | - | Internship | 3-4 | - | Preceptor | - | - | - |
| Nugent (2008) US | 5 | Qualitative | Convenience; 150 | Evaluation survey (open/closed responses) | - | 12 Weeks | 4 weeks of concentrate orientation | - | - | Increased | - |
| Olson-Sitki et al. (2012) US | 3 | Mixed methods | Convenience; 31 | Casey-Fink, investigator developed survey & field notes; R&V not reported | Residency Program | 12 | - | Nursing Practice Development Facilitator | - | Increased | - |
| Phoenix Bittner et al. (2017) US | 4 | Descriptive, longitudinal | Convenience; 46 | Advisory Board's Critical Thinking Diagnostic tool & program evaluation tool; R&V not reported | New Nurse Orientation Program | 12 | - | Unit-based clinical educator | Significant increases in critical thinking (e.g., prioritization, problem recognition, clinical decision making). | Increased | - |
| Pickens and Fargotstein (2006) US | 3 | Descriptive | Convenience; 10 | - | Preceptorship | 8 Weeks | - | Preceptor | - | - | - |
| Pillai et al. (2018) | 5 | Descriptive | Convenience; 241 | - | Residency | 14 Weeks | 2 Weeks General Hospital Orientation and 12-structure program | Preceptor, Program Coordinator, Human Nurse Recruiter who served as a mentor | - | - | - |
| Pine and Tart (2007) US | 3 | Descriptive | Convenience; 48 | - | Residency | 12 | 6 weeks to 6 months | Resident Facilitator | - | - | - |
| Roche et al. (2004) US | 4 | Descriptive | Convenience; 67 | Evaluation Questionnaire | Preceptored Orientation | 12 Weeks | - | Preceptor, Support Groups, Clinical Faculty | - | - | - |
| Rush et al. (2013a,b) | 7 | Quantitative | Convenience; 144 | Casey-Fink Graduate Nurse Experience; Cronbach's alpha for subscales were .69-.83 | New Graduate Transition Program | 12 | Ranged from <2 weeks to > 4 weeks | Varied: preceptor, mentor, transition program coordinators, clinical educators, unit staff | - | - | - |

Table 1 (Continued)

| Study descriptors | | | | | Program elements | | | | Outcomes | | |
|--------------------------------|----------------------------|---|---|---|---------------------------------------|----------------------------------|-----------------------------------|---|--|------------|------------------|
| Authors | Level of evidence score/12 | Design | Sampling approach and size | Measures used and validity /reliability | Type of program | Transition program length (mons) | Unit orientation length | Type of supports provided | Competency and critical thinking | Confidence | Job Satisfaction |
| Rush et al (2014) | 7 | Quantitative | Convenience; 245 | Casey-Fink Graduate Nurse Experience; Cronbach's alpha for subscales were .69-.83 | New Graduate Transition Program | 12 | Ranged from <2 weeks to > 4 weeks | Varied: preceptor, mentor, transition program coordinators, clinical educators, unit staff | – | – | – |
| Rush et al (2015) | 7 | Quantitative | Convenience; 245 | Casey-Fink Graduate Nurse Experience; Cronbach's alpha for subscales were .69-.83 | New Graduate Transition Program | 12 | Ranged from <2 weeks to > 4 weeks | Varied: preceptor, mentor, transition program coordinators, clinical educators, unit staff | Nurses participating in a NG program had higher organising, prioritizing communication, and leadership scores than non-program participants. | – | – |
| Schoessler and Waldo (2006) | 3 | Descriptive | – | – | RN Development Program | – | – | Preceptors, Educators, Managers | – | – | Increased |
| Scott et al. (2008) | 5 | Descriptive | Random Stratified; 144 (329?) | – | Orientation Program | – | Variable | – | – | – | – |
| Silvestre et al. (2017) US | 7 | Multi-site, Comparative Study, Randomized Controlled Trial | Random; 1032 | Unnamed surveys to new graduate nurses, nurse preceptors, site coordinators; R&V not reported | NCSBN Transition to Practice Program | 12 | Varied Across 70 Hospitals | Varied: preceptor, mentor, transition program coordinators, clinical educators, unit staff | – | – | – |
| Slate et al. (2018) US | 9 | Longitudinal, quasi-experimental, multiple group time series design | Convenience; Time point 1- n = 203; time point 2 n = 118; time point 3 n = 83 | McCloskey- Mueller Satisfaction Scale & Casey-Fink Graduate Nurse experience survey; R&V for original measures reported | Nurse Residency | 12 | – | Preceptors | – | – | – |
| Smyth et al. (2018) | 4 | Cross-sectional | Convenience; 77 | Survey to evaluate program components | Transition to Practice Program | 12 | 4.5 days | Nurse educator coordinating support and two clinical nurses working morning and afternoon shifts to provide clinical support. | – | – | – |
| Sorensen and Yankech (2008) US | 5 | Quasi-experimental | Convenience; 31 | California Critical Thinking Skills Test; previous reliability reported | Preceptorship Facilitated Orientation | 3-14 Weeks | 3-14 Weeks | Preceptor | Increased critical thinking | – | – |

| | | | | | | | | | | | |
|----------------------------------|----|---|--|---|---|----------|--|---|---|-----------|---|
| Spector et al. (2015) US | 12 | Longitudinal, randomized multisite, design. | Convenience; 1088 across 105 hospitals | Overall Competence Tool and the Specific Competency Tool, Brayfield & Rothe Index of Job Satisfaction, Work Stress; addressed reliability/validity in current study | NCSBN Transition to Practice Program compared to other TTP programs. | 12 | Institution-based but length not indicated | Preceptors | All groups significantly improved on specific competencies - patient-centered care, use of technology, communication and teamwork. | - | - |
| Spiva et al. (2013) US | 3 | Grounded theory | Convenience; 21 | Interviews | Orientation Program – they speak of residency program and preceptorship being part of it. | 12 | Not indicated | Preceptors, nurse manager, clinical nurse specialist | - | - | - |
| Strauss (2009) US | 3 | Descriptive | - | - | Medical-Surgical New Graduate Nurse Program | 12 Weeks | 6-weeks of orientation on medical-surgical units (3 weeks on each) | Program Coordinator, Nurse Manager, CNS, NG Instructor, Preceptor Mentor | - | - | - |
| Tiew et al. (2017) Singapore | 8 | Pretest-post-test interventional design | Convenience; 83 | National University Hospital Mentorship Evaluation (NUH ME) instrument; Internal reliability was a Cronbach's alpha of 0.92. Test-retest reliability was stable over time (ICC = 0.81). | Mentorship | 36 | 1 year | | - | - | - |
| Trepanier et al. (2012) US | 3 | Qualitative | Convenience; 15 hospitals | Secondary data analysis of a health care corporation's community-hospital database | Residency Program | 12 | - | Experienced nurse mentor (1:1) or mentor circle group facilitated by 2 RNs | - | - | - |
| Tsang et al. (2016) Hong Kong | 7 | Mixed methods | Convenience; 98 | Adapted Clinical Competence Questionnaire for evaluation of nursing professional behaviors (NPB 16 items) and skills competencies (SC 31 items). Adapted Occupational Stress Scale of Newly Graduated Nurse (OSSNN) for evaluation of workload subscale (WS), interpersonal relationship subscale (IRS) and ward management subscale (WMS); addressed reliability/validity in current study | Preceptor-ship Program | 12 | - | Preceptor | Increase in overall mean clinical competence [F (4, 473) = 13.53, p < .0001]] from baseline and across the 4 measuring points of the program. | Increased | - |
| Williams et al. (2007) US | 6 | Descriptive | Convenience; 679 | Casey-Fink Graduate Nurse Experience Survey, the Gerber's Control Over Nursing Practice Scale, and the McCloskey Mueller Satisfaction Scale | Residency | 12 | | Preceptor; Resident Facilitator | Increased competency | - | - |
| Wilson et al. (2018) US | 6 | Formative Evaluation | Convenience; 292 | - | Residency | 12 | Variable: from < 8 weeks up to 24 weeks. | Peers (monthly peer discussion groups); unit-based experienced nurse mentor/coach | Increased competence | Increased | - |

Table 1 (Continued)

| Study descriptors | | | Program elements | | | | Outcomes | | | | |
|---------------------------|----------------------------|--------------------|----------------------------|--|--|----------------------------------|-------------------------|---------------------------------------|----------------------------------|------------|------------------|
| Authors | Level of evidence score/12 | Design | Sampling approach and size | Measures used and validity /reliability | Type of program | Transition program length (mons) | Unit orientation length | Type of supports provided | Competency and critical thinking | Confidence | Job Satisfaction |
| Young et al. (2008) US | 6 | Quasi-experimental | Convenience; 23 | Nursing Role Conceptions Instrument; original reliability reported | New Graduate Nurse Orientation Program | 6 weeks | 6 weeks | Preceptor; program coordinator | - | - | - |
| Zucker et al. (2006) | 3 | Descriptive | - | - | Mentoring Program | 18 | - | Program Coordinator; Mentor/Navigator | - | - | - |

programs based on a specific model: Residency (n = 22); Extended Preceptorship (n = 12), Orientation (n = 13), Mentorship (n = 5), and Internship (n = 3).

Transition programs varied in length from less than one month to 36 months, with 10 papers not specifically identifying a program length. Of the 66 papers that identified a program length, 14 were three months or less, 11 were three to six months, 40 were longer than six months, and one program was 36 months. One investigation involved a mix of new graduates in programs from zero to three months and from four to six months in length.

3.1. Common features of transition programs

Descriptions of what constituted a 'New Graduate Nurse Transition Program' varied across studies. Despite the variability, transition programs shared some common features, including a defined resource person, mentorship, and peer support opportunities.

3.1.1. A defined resource person

Characteristic of transition programs was the availability of a defined new graduate resource person assigned in a one-to-one relationship with the new graduate. Although the majority of studies identified a resource person, a standard definition of this role and title was often lacking or the terms of reference for support titles inconsistent. For example, the bulk of the studies had the preceptor fulfill this additional support role but in many other studies this resource person was alternatively described as a Mentor (n = 20), 'Clinical Coach,' (n = 5) 'Sponsor,' (n = 1) or 'Navigator' (n = 1).

In some cases the resource person started their relationship with the new graduate nurse immediately upon hire, and in other cases the relationship did not begin until after a preceptored period. Beecroft et al (2006) distinguished the non-clinical, non-evaluative role of the resource person with the clinical supervisory role of the preceptor. Regardless of the title, this additional support person was intended to focus on the socialization of the new graduate nurse, their understanding of unit routines, roles and responsibilities, and their development of skill and cognitive competencies (Moore and Cagle, 2012; Spiva et al., 2013; Phoenix Bittner et al., 2017; Zucker et al., 2006).

Several studies identified the use of a single resource person to support multiple new graduates as an alternate model of support. Titles commonly used to identify this resource included 'Resident Facilitator,' 'Transition Program Coordinator,' 'Clinical Development Nurse, or 'Practice Trainer' whose role was to connect with new graduates and respond to any issues or concerns. None of these roles were specifically evaluated.

3.1.2. Mentorship

Mentorship was a common type of resource available for new graduate nurses within a formal transition program. Some programs had a range of support provided by one person, while others had multiple persons or a 'circle' of mentors allotted per new graduate nurse (Trepanier et al., 2012). Mentor arrangements were both formal and informal. Four studies identified mentor selection that was highly variable; new graduate nurses either selected their own mentor (Dyess and Parker, 2012), were matched with qualified, compatible mentors (Tiew et al., 2017), were assigned to specific mentors (e.g., nurse manager or graduate nurse coordinator (Forde-Johnson et al., 2017), or their preceptor became a mentor (Hunsberger et al., 2013). Only two studies discussed mentor training programs with little detail as to content delivery (Fox, 2010; Zucker et al., 2006).

Three mentorship programs enhanced new graduate nurse retention and in two of them, successful retention was tied to salary bonuses for mentors (Fox, 2010; Mills and Mullins, 2008; Zucker et al., 2006). Tiew et al. (2017) found that both the mentorship program and the existence of a mentor-mentee relationship resulted in an improvement in new graduate nurses' perception of support (Tiew et al., 2017). Beecroft et al. (2006) demonstrated that regular meetings with a mentor positively influenced the likelihood of the mentor being a stress reducer ($p=0.001$) and a source of guidance and support ($p<0.001$), and the mentee 'clicking' with the mentor ($p<0.001$). In addition, mentors of an older age were more likely to be stress reducers ($p=0.005$) and individuals who provided guidance and support ($p=0.100$). Fox (2010) found that 75% of the pilot group mentor-protégé pairs improved their satisfaction scores over the course of a structured mentorship program. Hunsberger et al (2012) found that new graduate nurse's receiving six months of mentored time, described an increase in confidence, competence, comfort, and experience in working with acutely ill patients and in building relationships with staff nurses.

3.1.3. Peer support opportunities

Peer support and providing opportunities for new graduate nurses to meet and discuss their transition experiences with each other was a theme in several (Henderson et al., 2015; Spiva et al., 2013). Keller et al. (2006) described a residency program with activities designed to promote the socialization and camaraderie of new graduate nurses (i.e. welcome breakfasts, lunches, and seasonal parties) that assisted them to cope with the stress and emotions experienced during transition. Researchers found peer support and camaraderie the top two satisfying aspects of new graduate nurses' work environment with resident interactions important in offering moral support and alleviating apprehension in transitioning from orientation to independent practice (Fink et al., 2008; Spiva et al., 2013). Collectively sharing and debriefing in a 'safe' context with peers improved new graduate nurse's professional comfort with performance progression and developed informal peer professional relationships (Henderson et al., 2015).

3.2. Impact on new graduate retention

Retention and turnover were important outcomes found in the new graduate nurse transition program literature (Bratt et al., 2012; Dyess and Parker, 2012; Figueroa et al., 2013; Tsang et al., 2016; Silvestre et al., 2017; Spector et al., 2015; Trepanier et al., 2012; Rush et al., 2013a). A summary of studies that measured these outcomes is provided in Table 2. *Retention rates* indicated the number or percentage of new graduate nurses remaining at an organization at the end of a defined period. *Turnover rates* represented a calculated percentage of the number of new graduate nurses leaving an organization within 12 months of their hire date divided by the number of new graduate nurses hired during that same time period. Organizations strive for a high retention rate and a low turnover rate. A total of 17 papers examined new graduate nurse retention rates with five reporting pre-post program retention rates and 12 providing post-program retention rates only. The average retention rate across these studies was 88%. All three comparative studies reported higher retention rates for new graduate nurse programs vs controls. Of the 10 papers investigating new graduate nurse turnover rates, six reported pre-post-program rates, while three reported post-program rates only. The average turnover rate across studies was 11%. In those studies reporting reasons for turnover, voluntary choice accounted for most of the turnover (16–19%) and involuntary reasons, such as termination, illness, injury, or performance constituted 1% or less of the turnover (Blegen et al., 2015; Krugman et al., 2006; Spector et al., 2015).

3.3. Cost benefit of transition programs

Twelve papers reported cost-benefit analysis of transition support programs. Despite significant variability in their program outcome criteria, all papers claimed significant cost savings primarily attributed to increased retention and reduced turnover of new graduate nurses during the initial 1–3 years of employment. Five reported actual per capita cost figures and seven provided cost-savings information. However, although actual numerical figures were reported, the process for obtaining the figures was not consistently detailed.

The costs related to supporting the transition period for new graduate nurses arise primarily from new graduate nurse recruiting time, educational development and support (including educator time, development and salary costs for preceptors/mentors), supernumerary staffing, and replacement costs for attendance at support sessions (Fox, 2010; Marcum and West, 2004; Pillai et al., 2018; Pine and Tart, 2007). The range of replacement costs for a full-time equivalent Registered Nurse have been cited anywhere between \$36,567 United States dollars (Silvestre et al., 2017) and \$98,879 United States dollars (Jones, 2008), based on projections that replacing a new graduate nurse will amount to 75–200% of that Registered Nurse's annual salary (Mills and Mullins, 2008; Silvestre et al., 2017). When considering cost vs savings overall, much of the data were related to improvements in new graduate nurse retention or reductions in turnover. Trepanier et al. (2012) estimated total cost-benefit of a nursing residency program between \$8.1 million and \$41.7 million over 12 months when combining the impact of turnover and contract labor usage for 15 hospitals. Silvestre and colleagues further calculated the costs of maintaining the transition program per new graduate nurse, determining a final net cost savings of \$7265 United States dollars per new graduate nurse retained over time. Pine and Tart (2007) reported a total program cost savings of \$823,680 United States dollars when their new graduate nurse turnover dropped from 50% to 13%, while Marcum and West (2004) reported a \$330,481 United States dollars annual return on investment when new graduate nurse retention rose from 60 to 89%. Finally, using data extending over a 6-month period, Lee et al. (2009) claimed a savings of \$186,102 United States dollars, though no specific retention or turnover data were provided.

3.4. Education (pre-registration)

Six studies addressed retrospectively new graduates' undergraduate education and preparation. It was common for new graduates to identify a deficiency in clinical practice opportunities during undergraduate education (Ellerton and Gregor, 2003) and their need for practical (e.g. delivering medications) vs academic skills (e.g., researching a journal article) (Adamack and Rush, 2014; Ankers et al., 2018). They perceived a lack of preparation in areas such as administering medications to groups of clients (Li and Kenward, 2006; pharmacology (Rydon et al., 2008); nurse-physician interactions (Casey et al., 2004; Li and Kenward, 2006), and clinical leadership role development (Adamack and Rush, 2014; Ankers et al., 2018). Casey et al. (2004) found that 96% of new graduate nurse residents ($n=270$) were not comfortable performing skills and procedures at the time of hire. In another study, experienced practitioners, unit managers, and graduates themselves reinforced this lack of new graduate nurse readiness for independent practice (Clark and Holmes, 2007). Implicit across studies was the lack of preparatory psycho-social education needed to deal with the stress, negative thinking, and difficult situations new graduate nurses often face in the first year of practice.

Stronger nursing preparation programs appeared to include common education elements (Li and Kenward, 2006). In a large US

Table 2
Retention and Turnover Rates.

| Author(s) | Level of Evidence Score | Program type | Program length | Study sample size | Pre-program retention | Post-program retention | % change | Time when post-program rate measured | Cost Benefit |
|------------------------------------|-------------------------|---|----------------|-------------------|-----------------------|------------------------------------|----------|--|---|
| Pre-Post Program Retention | | | | | | | | | |
| Almada et al. (2004) | 3 | Un-named | 12 mo. | 40 | 60% | 89% | 39% | At 14 mo. post implementation of the program | |
| Anderson et al. (2009) | 6 | Residency | 12 mo. | 90 | 60% | 90% | 30% | At one year post hire | |
| Leigh et al. (2005) | 5 | Un-named | 12 mo. | Not provided | 76% | 99% | 23% | At one year post hire | \$186,102 US six months savings |
| Marcum and West (2004) | 5 | Un-named | 9 mo. | 20 | 60% | 89% | 29% | At 18 mo. post completion of the program | \$330,481 US annual return on investment |
| Zucker et al. (2006) | 3 | Mentorship | 18 mo. | Not provided | 77% | 90% | 13% | At 6 mo. program implementation | |
| Post-Program Retention Only | | | | | | | | | |
| Altier and Krsek (2006) | 6 | Residency | 12 mo. | 111 | – | 87% | – | At one year post hire | |
| Blegen et al. (2015) | 10 | NCSBN Transition to Practice Program | 12 mos | 1416 | – | 80–86% | – | At the end of the first year | |
| Bratt (2009) | 5 | Residency | 15 mo. | 1,100 | – | 90% | – | 15–18 mo. post program completion | |
| Bratt and Felzer (2012) | 8 | Residency | 12 mo | 468 | – | 81% | – | At one year, the end of the program | |
| Dyess and Parker (2012) | 5 | Novice Nurse Leadership Institute Program | 10 mo | 109 | – | 80% | – | | |
| Gavlak (2007) | 5 | Un-named | 12 mo. | 120 | – | 94% | – | At one year post hire | |
| Keller et al. (2006) | 3 | Residency | 12 mo. | 72 | – | 89% | – | At one year post hire | |
| Kowalski and Cross (2010) | 5 | Residency | 12 mo. | 55 | – | 78% | – | At one year post hire | |
| Mills and Mullins (2008) | 3 | Mentorship | 12 mo. | Not provided | – | Mentored = 92%; Control = 77% | – | No exact point provided, but within one year of hire | |
| Pillai et al. (2018) | | Residency | 12 mo | 241 | – | 88% | – | | |
| Silvestre et al. (2017) | 7 | NCSBN Transition to Practice Program | 12 mos | 1088 | – | TPP = 84%; Limited Control = 73% | – | End of first year | Net cost savings of \$7265 per NGRN retained accounting for the initial program development costs |
| Strauss (2009) | 3 | Un-named | 3 mo. | Not provided | – | 97% | – | At one year post hire | |
| Tsang et al. (2016) | 7 | Residency Program | 12 mos | 98 | – | Program = 0.01%; no program = 5.8% | – | One year post hire | These are resignation rates that they use interchangeably with retention rates |

survey study, healthcare agency administrators (n = 410) and new graduate nurses (n = 7497) identified elements such as faculty that taught didactic content and clinical activities, used information technology and evidence-based practice, integrated pathophysiology and critical thinking throughout the curriculum, had independent course content related to the care of specific client populations (eg. medical-surgical clients, clients with psychiatric disorders) and women's health.

Four studies made explicit that the transition programs involved a partnership between educational institutions and healthcare organizations. Partnerships were often initiated to advance innovative solutions, reduce costs, and ensure success. An important partnership outcome was the creation of human resources support. This support took a variety of forms including,

academic involvement in preceptor education (Pickens and Fargotstein, 2006), administrative oversight (Bratt, 2009), and staff nurse access to academic courses for credit (Dyess and Parker, 2012; Roche et al., 2004). An additional benefit of these partnerships was improved new graduate nurse retention (Pickens and Fargotstein, 2006; Roche et al., 2004).

3.5. Education (practice)

Education opportunities during a formal transition program were described in 25 studies, though component details were variable across studies. Only two of the 25 papers (Blanzola et al., 2004; Young et al., 2008), provided a breakdown of the time spent on each component (e.g. hours spent on practical education vs.

hours spent on theoretical classroom type learning). Across studies, a number of educational approaches were used: formal classes, workshops, in-service programs, reflective journaling, simulation, small group case studies, website/online materials/modules and professional portfolios (Forneris and Peder-McAlpine, 2009; Keller et al., 2006; Bratt and Felzer, 2012; Tsang et al., 2016; Kramer et al., 2013; Phoenix Bittner et al., 2017; Trepanier et al., 2012). Few educational strategies were evaluated. In one study, new graduate nurses reported hands-on/bedside learning as the most helpful of several educational strategies followed by in-service programs/workshops, but only the helpfulness of the in-service programs/workshops showed a significant relationship with new graduate nurses' transition score (Rush et al., 2013b). In two studies the use of weekly simulation for 10–12 weeks contributed to improvements in new graduate nurses' critical thinking skills, confidence, competence and preparation for independent practice (Phoenix Bittner et al., 2017; Beyea et al., 2007).

Education opportunities were delivered during, and at points beyond unit specific orientation periods. Two studies noted consolidated intensive, week-long didactic educational/classroom immersion (Olson-Sitki et al., 2012; Figueroa et al., 2013) early after hire but more often, education occurred during several days (ranging from 3 to 16) staggered over months (Cubit and Lopez, 2012; Forde-Johnson et al., 2017; Henderson et al., 2015; Hussein et al., 2017; Spiva et al., 2013). Only two studies evaluated the timing of education. Hussein et al. (2017) found no significant difference in new graduate nurses' satisfaction with the number of study days they received from the beginning (8–10 weeks) to the end (10–12 months) of the transition program. Similarly, Rush et al. (2013b) found no significant difference in transition scores between new graduate nurses in transition programs receiving education across the first year compared to those with educational days consolidated in the orientation period.

Five studies described prioritizing program content delivery by putting more essential content (e.g. risk assessment, documentation, pain management, end-of-life care) within the supernumerary period (Blanzola et al., 2004; Gavlak, 2007; Beyea et al., 2007; Forde-Johnson et al., 2017) and leaving other content (e.g., professional development topics, conflict management, leadership, tracheostomy care) until later in the transition programs when the new graduate nurse had accrued additional clinical experience (Blanzola et al., 2004; Keller et al., 2006; Schoessler and Waldo, 2006). This content prioritization was not evaluated. New nurses in Doughty et al.'s (2018) qualitative study found that study days were most beneficial "when knowledge from theory and practice came together and made sense" (pg. 103). On the whole, educational/study days were encouraged; in only one study (Olson-Sitki et al., 2012) were these days identified as paid and mandatory.

3.6. Support/satisfaction

Support was a consistent theme across studies. The initial support provided to new graduate nurses typically occurred during an orientation period and was primarily provided by a preceptored experience. Issues related to preceptor access, allocation, (Haggerty et al., 2013; Slate et al., 2018) and preparedness (Blegen et al., 2015) were prevalent throughout the literature, with evidence mixed as to new graduate nurses' satisfaction with their preceptored experiences. New graduate nurses tended to have polarized responses to preceptors as either enhancing or hindering their progression (Rush et al., 2013a; Spiva et al., 2013). Preceptors who emphasized their learning and growth, gave feedback, engaged staff to build unit support, kept them on track, and encouraged their evolving accountability in care decisions

enhanced progression (Spiva et al., 2013; Moore and Cagle, 2012). Hindrances to progression were most commonly due to new graduate nurses' lack of clinical time 'at the bedside' with their preceptor, limited supervision and feedback on their clinical skills (Forde-Johnson et al., 2017; Spiva et al., 2013), preceptor inexperience and inability to meet new graduate nurse expectations (Haggerty et al., 2013; Spiva et al., 2013) and inconsistency in preceptor meetings and mentoring (Allan et al., 2017).

Preceptor allocation, or the numbers of preceptors and/or preceptored weeks, was highlighted in several studies. Despite evidence documenting the difficulty some new graduate nurses had with multiple primary preceptors (range: 4–10), many new graduates found assignment to different preceptors beneficial in providing exposure to alternative approaches to prioritizing care and time management (Nugent, 2008; Slate et al., 2018). Bratt and Felzer (2012) found that neither the number of preceptors nor number of precepted weeks were found to predict the new graduate nurses' organizational commitment. Rush et al. (2015) reported no statistically significant association between the percentage of preceptored shifts that new graduate nurses had during their unit-specific orientation and their transition scores. A comparison study of High Preceptor Support and Low Preceptor Support hospitals found new graduate nurses and preceptors from High Preceptor Support hospitals rated the preceptor experience more favorably than those from Low Preceptor Support hospitals (Blegen et al., 2015). High Preceptor Support hospitals enhanced support by bundling several concurrent strategies: reducing the preceptor's clinical assignment, scheduling the new graduate nurse on the same shifts as the preceptor, arranging for new graduate nurse and preceptor sharing of patient assignments, keeping the number of preceptees for each preceptor low and requiring preceptor training (Blegen et al., 2015). However, outcomes were not measured.

Eleven studies discussed the importance of preceptors receiving formal education and reported outcomes that included enhanced preceptor satisfaction and retention (Baggot et al., 2005; Beecroft et al., 2008) and new graduate nurse critical thinking (Sorensen and Yankech, 2008). There was considerable variation in the length of preceptor training programs (from 3 hours to 3 days), delivery methods, and use of implementation frameworks. Preceptor attendance often suffered because of preceptor workload and acuity issues in the senior nurse's practice setting (Blegen et al., 2015; Haggerty et al., 2013). In one study, new graduate nurses were allotted more than one preceptor as long as all preceptors had training (Blegen et al., 2015). Common elements of preceptor training programs included adult learning principles, learning styles, conflict resolution, use of an interactive experiential approach and frameworks such as Benner's (1984) novice to expert transition framework or England's Department of Health Preceptorship Framework (Marks-Maran et al., 2013). To a lesser extent was consideration of preceptor matching but with no measurable outcomes.

Six of 36 papers that discussed orientation within the transition program literature made specific reference to the use of 'supernumerary time,' or time when the new graduate nurse was 'buddied up' or preceptored by another registered nurse or clinical nurse educator (Hussein et al., 2017) to become immersed in their new role without workload pressures (Hunsberger et al., 2013; Leigh et al., 2005). Supernumerary timeframes ranged in length from 6.5 days (Hussein et al., 2017) up to six months (Hunsberger et al., 2013).

Increases in retention, job satisfaction, transition, and comfort with skills are outcomes that have been reported in conjunction with orientation within a transition program. Longer orientation was shown in one United States study (n=329) to decrease turnover rates. New graduates who had already left their first

nursing job had, on average, an orientation two weeks less than new graduate nurses who had not left their first nursing job (Scott et al., 2008). Further, new graduate nurses who received a longer orientation that met all of their needs were more satisfied in their current position. Rush et al (2015) found that new graduate nurses who attended orientations of four weeks or more had significantly higher total transition scores (higher communication/leadership, professional satisfaction) than new graduate nurses with less than 4 week orientations. In another study, new graduate nurses' low satisfaction with their transitional support programs' unit orientation reflected inadequate time to become familiar with ward routines, layout, equipment and policies (Hussein et al., 2017). An orientation that included dedicated time for practicing specific skills (e.g. code blue, chest tubes, and advanced parenteral therapy) increased comfort with skill performance (Gavlak, 2007). In another survey study (n=434) open-ended qualitative comments from new graduate nurses revealed that orientation could be improved by including fewer formal classes (Fink et al., 2008).

New graduate satisfaction was examined in 11 studies and typically measured via self-report or inferred based on other variables such as retention. Across studies, new graduate nurses participating in transition programs demonstrated varied satisfaction. Two studies reported no significant change in new graduate nurses' satisfaction during their 12 month new graduate nurse programs (Hussein et al., 2017; Olson-Sitki et al., 2012). Other studies reported less new graduate nurse satisfaction in the initial transition phase or first six months, but increased satisfaction in the second six months to one-year transition period ($p < 0.05$) (Krugman et al., 2006; Williams et al., 2007; Casey et al., 2004). In two studies, the time period from six to nine months after hire was found to be a highly vulnerable period for new graduates. Bratt found this time period associated with the highest levels of stress for new graduate nurses, and the lowest levels of job satisfaction and organizational commitment (Bratt, 2009). Spector et al. (2015) found that new nurse graduates were less satisfied at 6 and 9 months than at baseline, regardless of the program they were in, but between 9 and 12 months all new graduate nurses experienced an increase in job satisfaction. However, new nurses in the established new graduate nurse programs remained the most satisfied over time and rose to the highest level of satisfaction between 9 and 12 months. New graduates (n=9) in another study did not feel fully independent but rather "somewhere between student and registered nurse" (p. 14) during the graduate program; a sense of independence came only after they had completed the one-year transition program leading the authors to conclude that the transition program acts as a shelter (McKenna and Newton, 2008).

3.7. Competency and confidence

Competency and confidence emerged as important themes in 23 studies of new graduate nurse transition programs. Competency was conceptualized broadly (e.g., overall clinical competence) in some studies and more specifically (e.g., critical thinking diagnostics, leadership competencies) in others. Although competence was generally measured using standardized self-report measures, there was considerable variation in the measures that were used. Standardized tools utilized to measure competency included the Performance Based Development System (Anthony and del Bueno, 1993), the Professional Judgment Rating Form (Facione et al., 1998), and the Casey-Fink Graduate Nurse Experience (Casey et al., 2004; Goode et al., 2009). Measures also included the Nursing Evaluation Competency Assessment (Dyess and Parker, 2012), Advisory Board Company (2009) Nursing Executive Center's Critical Thinking Diagnostic Tool (Phoenix

Bittner et al., 2017; Spector et al., 2015), Adapted Clinical Competence Questionnaire (Tsang et al., 2016) and the California Critical Thinking Skills Test (Sorensen and Yankech, 2008).

Overall, regardless of the program type, measure used, or rater, competence was observed to increase over time from baseline to program completion (Beyea et al., 2007; Goode et al., 2009; Komaratat and Oumtane, 2009; Phoenix Bittner et al., 2017; Tsang et al., 2016). Staged approaches, such as a tiered, simple to complex skills acquisition orientation (Joswiak, 2018), or a two-stage nurse residency program involving transition plus integration (Kramer et al., 2013) were particularly effective in promoting comfort and competency. The integration of evidence-based components in transition programs similarly enhanced competency. A comparison study of three new graduate nurse program types – National Council State Board of Nursing's Transition to Practice programs, established programs with six or more of the National Council State Board of Nursing's evidence-based criteria, and limited programs with less than 6 of National Council State Board of Nursing evidence based program features – found statistically significant increases (at 6, 9, and 12 months) in competency in all groups related to communication and teamwork, patient-centered care, quality improvement, and evidence-based practice (Spector et al., 2015).

Closely linked with competence in this body of literature was the new graduate nurse's level of confidence. Twenty-six articles addressed the impact of a transition program on new graduate nurse confidence. Except for one study (Hussein et al., 2017), confidence increased over time, both in general knowledge and skills (Phoenix Bittner et al., 2017; Olson-Sitki et al., 2012) and in specific areas of practice such as communicating with physicians, delegating to nursing assistants (Olson-Sitki et al., 2012), handling different levels of clinical scenarios involving staff, patients, and doctors (Tsang et al., 2016) and difficult work situations, working in teams, making decisions, dealing with problems related to patient care (Marks-Maran et al., 2013), and in coping with stress. In their qualitative study, Kramer et al. (2013) described feedback on skill performance or specific patient care activities as an important strategy for bolstering the new graduate nurse's self-confidence during the early months. This strategy saw further improvement in the new graduate nurse's care provision and management of clinical situations for multiple patients during later months. In some cases, improved confidence was inferred by the author based on other outcomes such as retention (Blanzola et al., 2004), decreased level of anxiety (Kowalski and Cross, 2010, $p = 0.004$), or emerged as a theme from qualitative data (Fink et al., 2008; Hayes and Scott, 2007; Beyea et al., 2007).

3.8. Workplace environment

Workplace culture has assumed growing importance in new graduate nurse transition but its role within the context of a formal transition program has received limited study. The most comprehensive investigation regarding new graduate nurses (n = 371) in a transition program and their workplace environment utilized a standardized tool to rank the health of the work environments of clinical units employing new graduate nurses (Kramer et al., 2011). Results demonstrated that new graduates working on clinical units with work environments identified as *healthy* or *very healthy* experienced less reality shock as they transitioned to practice than new graduate nurses working on clinical units that 'Needed Improvement.' Kramer et al. (2013) found that new graduate nurses working on the 'best units' in the 'best hospitals' (aka Magnet™ hospitals), or practicing on clinical units with "very healthy work environments" had built in strategies that helped them during the transition and integration phases. Allan et al. (2017) observed that supportive ward cultures, in which staff

viewed new graduate nurse support as a team responsibility, compensated for patchy or missing formal 1:1 mentorship/preceptorship. Other qualitative evidence similarly revealed the helpfulness and importance of the unit-based nursing team in easing transition, particularly as it related to the freedom of new graduate nurses to ask questions (Henderson et al., 2015) and develop their practice (Haggerty et al., 2013). This is consistent with new graduate nurses (n = 90) involved in an interactive nurse residency program, who described work environment 'satisfiers' as helping people and teamwork, and work 'dis-satisfiers' as poor teamwork, physician disrespect, and staffing/scheduling (Anderson et al., 2009). New nurses participating in a transition program described a lack of acceptance and respect, and an insensitivity of experienced nurses to their needs for continued development in time management skills (Casey et al., 2004).

Ward environments characterized by bullying and negative labelling of new graduate nurses made transition difficult for novice nurses, even while enrolled in a transition program (Doughty et al., 2018). In one study, 39% of new graduate nurse participants (N = 242) reported experiences of bullying/harassment regardless of their participation in a formal transition program (Rush et al., 2014). Rush et al (2014) found that bullying attenuated the relationship between new graduate nurses' access to support and their transition, but those new graduate nurses who experienced bullying/harassment had better transition scores if they participated in a formal transition program. Bratt and Felzer (2012) found that staffing adequacy, a satisfying schedule, and an appropriately resourced work environment (e.g., space, available equipment/supplies) were highly predictive of new graduate nurses' organizational commitment at the start of the residency program and at 12 months the work environment was predictive of new graduate nurses' organizational commitment. Hussein et al. (2017) found no significant difference in new graduate nurses' satisfaction with the clinical practice environment related to time spent in a residency program. Rather, staffing ratios, adequate skill mix, patient acuity, instrumental support and clinical workload were the predominant factors of influence reported (Hussein et al., 2017).

4. Discussion

This integrative review demonstrated variable quality of evidence related to new graduate nurse programs (Spector et al., 2015). Overall evidence was variable but overall it was of low to moderate quality, limiting best practices recommendations. The stronger evidence contributes greater weight to the discussion and study conclusions. Few designs had the degree of control necessary to rule out competing explanations. Although there was overall lack of outcome measures in this area of study, evidence shows benefit in selected areas of new graduate transition.

Improved new graduate nurse retention as the result of a transition program was a well-supported theme. The more robust evidence linked standardized programs to increased retention and decreased turnover. There were few rigorous designs comparing new graduate retention pre- and post-implementation of a transition program. There was also variability in the measures used such as retention rate, turnover rates, and attrition rate, and no evidence of a standardized definition or formula used when programs and organizations calculated these values. Consistency in the measurement of new graduate retention across provinces and states and national reporting would allow comparison across programs and identification of transition components that facilitate retention. The literature discussing the financial aspects of transition programs was similarly challenged by a lack of consistency in measurement, likely contributing to the broad range

of findings regarding cost per capita and return on investment of transition programs.

Academic preparation, although not the emphasis of this review, was addressed retrospectively in papers rated as weaker in evidence. Accounts revealed specific areas in which new graduate nurses lack preparation for professional practice. Education was an important component of new graduate nurse transition programs and generally well detailed as to content, delivery modalities, and timing. Despite this, the reports on educationally-based transition initiatives were largely descriptive, with limited exploration of the relationships between educational components and their unique or combined contributions to the transition experience. The majority of programs staggered education over time, with the seeming intent to parallel the evolving developmental needs of new graduate nurses during their first year of practice.

Support across the trajectory of new graduate nurse transition typically consisted of some form of 'people support.' While the literature revealed the ongoing utilization of a variety of transition support roles (i.e. coaches, mentors, transition program coordinators, and new graduate nurse peers), quality of preceptor support, including training, emerged as an important emphasis in new graduate nurse transition programs. Although a range of strategies were described to enhance preceptor support, few strategies were evaluated. The stronger evidence pointed to the use of strategy bundling that gave preceptors dedicated time with the new graduate nurse (Blegen et al., 2015), use of a transition staging model to incrementally progress the new graduate nurse into the realities of practice (Figueroa et al., 2016) and regular mentor meetings on new graduate nurses' stress reduction (Beecroft et al., 2006). Subjective reports from some of the qualitative investigations in this review revealed new graduate nurses value the moral support provided by peer-support opportunities. Whether new graduate nurses benefit from multiple or single supports, for how long, and for which critical aspects of transition, remain unknown.

The evidence was inconclusive as to the recommended length of a transition program's unit orientation phase when support is quite concentrated, though it suggested longer orientations (>4months) resulted in better new graduate satisfaction, transition, and retention (Rush et al., 2015). Beyond unit orientation the bulk of the evidence suggested that new graduate nurses struggle with high levels of stress and low levels of job satisfaction for up to nine months post-hire, thus some level of support should be available to new graduates at least through this period.

Evidence consistently demonstrated that competence and confidence developed over time regardless of the type of transition program available. However, the use of one group only longitudinal designs in several studies made it difficult to determine whether the gains in competence and confidence reflected program effects or were due to maturation or testing effects (Tsang et al., 2016; Phoenix Bittner et al., 2017). However, the strongest evidence suggested that established, standardized, and evidence-based programs had the best outcomes. In general, confidence, and competency were measured via self-report, preceptor report, or inferred on the basis of another variable. There are standardized tools available to measure such variables, and these were utilized by some of the stronger studies. The timing of measurement and its interaction with new graduate nurses' consolidation of knowledge, skills, and judgments bears further study.

Healthy work environments influence new graduate nurse transition, yet were addressed in few studies. Perhaps most interesting was the finding that supportive unit cultures had the capacity to compensate for inadequate preceptorship and mentorship during transition. Transition programs would benefit from attention to creating cultures in which there is a team or unit-based approach to integrating the novice practitioner into

the workplace. Beginning evidence suggests that new graduate nurse transition programs mitigate bullying cultures by providing access to support not always available to those not participating in programs (Rush et al., 2014). Creating healthy work environments that have zero tolerance for bullying would provide support to new graduate nurses navigating the stressful transition to professional practice, enabling nurses to work collectively to control the context in which nursing is practiced (Kramer et al., 2011).

5. Future research recommendations

This review focused on new graduate nurse transition in acute-care settings limiting generalizability of the findings. Further, within acute-care settings only studies involving new graduate nurses transition programs targeting general medical-surgical environments were reviewed. This demarcation became challenging as studies often included a combination of general and specialty in-hospital units. Increasingly, medical-surgical practice is being conceptualized as specialty practice.

It is recommended that further research in the area of new graduate nurse transition include more rigorous study designs. Even the strongest evidence was challenged to draw definitive conclusions about the impact and effectiveness of formalized support programs on the new graduate nurse transition experience. There is continuing need to build on the foundation of longitudinal studies that tracks outcomes of transition programs over time but evidence would be strengthened with greater attention to testing new graduate nurse transition models and integrating evidence-based components to address vulnerable periods for new graduate nurses. Experimental investigations are needed to clearly identify the benefits of a transition program compared to not providing such formal support. Further investigation to conclusively demonstrate a positive return on investment is necessary to validate for funding sources the importance of formal new graduate transition programs. The potential for partnerships between academia and agencies to facilitate smooth transition holds promise, but would benefit from attention to both process and outcomes measurements to appraise the impact.

Strong investigations evaluating the various components of transition programs are also warranted, such as the impact of transition-specific supports (e.g. Transition Program Coordinators). For example, continued study regarding orientation length, supernumerary periods, and the structure of preceptor support within new graduate nurse transition programs would be beneficial. Specifically, issues related to preceptor assignment or new graduate nurse self-selection of preceptors may be worth further study as these approaches relate to the quality of the new graduate nurse's transition experience. The unique contributions of new graduate nurse educational content, delivery modalities, and timing, as well as their interactions, are areas for continued study to facilitate greater intentionality in approaches that maximize benefit for the new graduate nurse. Although a staggered approach to new graduate nurse education seems intuitively sound, more evidence is needed to confirm this approach as advantageous in easing new graduate transition. Additionally, strategic use of simulation could be tested further to optimize its value in enhancing the transitional experience of new graduate nurses. Evidence-based strategies to improve clinical unit work environments would be very constructive for units employing new graduates. With the growing acceptance and mandating of new graduate nurse transition programs, coupled with comparative data showing benefits to new graduate nurses when programs integrate evidence-based components, defining a minimum dataset of components to maximize outcomes for new graduate nurses may be a promising direction for research.

6. Conclusions

This integrative review examined literature from the past 20 years related to the new graduate nurse experience of their education (pre-registration and continuing into practice), sense of support and job satisfaction, skill competency, critical thinking, and general workplace environment. While the quality of existing evidence was quite variable, it was clear that new graduate nurse transition programs ease the move from student to practitioner. Perhaps the most significant finding of this review was the strong influence of bundled strategies that enhanced the quality of preceptor support and positively influenced the new graduate nurse transition experience. Other findings suggest that ongoing research efforts should be focused on specific educational strategies (i.e. simulation) and the identification of where within the stages of new graduate nurse transition, particular support strategies would be best situated to be most effective. Finally, though opportunities to share transition experiences with peers was frequently mentioned, this support element remains virtually unstudied. Finally, nursing stakeholders need to continue to work on improving the clinical unit work culture to make it more amenable to integrating new professionals.

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Appendix A. Medline Search History

Database: Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) <1946 to November 25, 2018>

Search Strategy:

1 (graduat\$ adj2 nurs\$).tw. (3094)

2 (new adj nurse\$).tw. (905)

3 ((new\$ adj (qualified or registered or generation or licensed or graduat\$)) and nurs\$).tw. (1724)

4 (novice adj nurse\$).tw. (331)

5 or/1-4 (4978)

6 (integrat\$ or transition or program\$ or initiative\$ or mentorship or "job satisfaction" or burnout or retain\$ or retention or turnover or "professional development" or empowerment or engagement or "staff development" or orientation\$ or orienting or preceptorship\$).tw. (1,955,865)

7 5 and 6 (2761)

*8 limit 7 to (abstracts and english language and yr="2012-Current") (1093)

*This search represents the one used to update this review.

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