INTERVENTIONS TO SUPPORT GRADUATE NURSE TRANSITION TO PRACTICE AND ASSOCIATED OUTCOMES: A SYSTEMATIC REVIEW

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ABSTRACT

Objective

The aim of this mixed methods systematic review was to: i) document the interventions that support and facilitate graduate nurse transition from university to practice in a diversity of healthcare settings and ii) to identify outcomes from graduate nurse transition interventions for the graduate, patient or client, and health service.

Design

This mixed methods systematic review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses. All quantitative, qualitative, and mixed methods studies were included if they met the inclusion criteria. The protocol was registered with Prospero.

Data sources

Primary research studies located in Medline, EmBase, CINAHL, Prospero, Cochrane Library, PsycInfo, and Web of Science (Social Science Citation Index). All quantitative, qualitative, and mixed methods studies were included if they met the inclusion criteria.

Review methods

Using a comprehensive search strategy, retrieved articles were screened by two reviewers at the title, abstract, and full-text stage. Reviewer disagreements were discussed until consensus was achieved. The well-validated Mixed-Methods Appraisal Tool was used to assess quality of the quantitative, qualitative, and mixed methods studies.

Results

A total of 130 studies were included as the review dataset. There was a myriad of terms used to describe transition interventions, and programme length and settings varied. The content of transition interventions was not well defined, and there was a lack of studies outside acute hospital settings. Data collection methods varied widely. The majority of authors reported outcomes for the graduate or the graduate and service, with only one reporting outcomes for the patient or client. There was a significant variation in quality across the studies.

Conclusions

This review addresses a significant gap in the literature by documenting transition interventions in a diversity of health settings and outcomes from these interventions. Interest in transition to practice continues to rise, but there is an urgent need to conduct well designed, robust, and larger-scale studies at the national and transnational levels.

Keywords - Graduate; transition; practice; systematic review.

INTRODUCTION

The aim of this mixed methods systematic review was to document the interventions that support and facilitate graduate nurse transition from university to practice in a diversity of healthcare settings. Secondly, it was to identify outcomes from graduate nurse transition interventions for the graduate, patient or client, and health service. The definition of transition and transition intervention was intentionally broad. The term transition is used extensively within the literature; however, authors argue that the concept is poorly defined and lacks a strong theoretical description of what transition entails (Chicca & Bindon, 2019). Authors commonly describe transition as a passage or a movement from one condition, phase or place (Chicca & Bindon, 2019; Chick & Meleis, 1986; Duchscher, 2009). There is debate whether this is a linear process or a much more complex, dynamic process of movement and change (Chicca & Bindon, 2019). Within this review, transition interventions were defined as programmes, programme elements, or strategies designed to support a graduate's transition to work in any healthcare setting.

BACKGROUND

Transition to practice for newly qualified nurses is of international concern from a health system, service, nurse, and client perspective (Feng & Tsai, 2012; Phillips, Kenny, & Esterman, 2017). Maintaining a stable, highly qualified nursing workforce is a global aspiration, but recruiting and retaining sufficient registered nurses to ensure safe and quality care remains a global problem (World Health Organisation, 2016, 2020). In 2013, the World Health Organisation (WHO) (World Health Organisation, 2016) predicted that 40% of nurses would leave the profession in the next decade. Loss of new graduates, through attrition or lost productivity days, is highly problematic since they form the primary source of entrants to the nursing profession (Phillips, Kenny, Esterman, & Smith, 2014). The inability to sustain a highly skilled workforce has direct ramifications for client care and positive health outcomes (De Raeve & Adams, 2018; World Health Organisation, 2020).

There is evidence of a strong correlation between poor graduate transition and registered nurse attrition (Duclos-Miller, 2011). The economic and service costs of graduate turnover to health services is a considerable burden (Rheaume, Clement, & Lebel, 2011), but the financial and psychosocial costs to graduates who choose to resign, after investing considerable time and money in tertiary education is difficult to quantify (Flinkman, Isopahkala-Bouret, & SalanterÃ., 2013; Flinkman, Laine, Leino-Kilpi, Hasselhorn, & Salanterä, 2008; Flinkman, Leino-Kilpi, & Salanterä, 2010).

For new graduates entering the workforce, transition is described as 'a process of learning and adjustment and socialisation to a new culture'(Phillips et al., 2014 p.107). For many new graduates, the process of assimilation and socialisation into the workplace has been described as difficult, onerous, tumultuous, stressful, and anxiety provoking (Phillips et al., 2017) and 'life in a very uncomfortable world' (Perrone & Vickers, 2003 p.72). Over four decades ago, Kramer (1974) described the cultural shift from student to registered nurse as *reality shock.* Since that time, authors describe transition as a time of role ambiguity (Chang & Hancock, 2003), with role overload and unclear expectations (Newton & McKenna, 2007). Transition for newly qualified nurses is described as marginalisation (Duchscher, 2009), where graduates are manipulated to accept dogmatic institutional practices that jar starkly with educational ideals cultivated in higher education settings (Pellico, Brewer, & Kovner, 2009). These issues traverse geographical boundaries (Wolff, Pesut, & Regan, 2010).

Graduates must be supported during their transition to registered nurse (Darvill, Fallon, & Livesley, 2014; Phillips, Esterman, & Kenny, 2015), but this is made difficult by an ageing nursing workforce, high levels of fatigue, job dissatisfaction, and burnout amongst existing staff (Laschinger & Grau, 2012). There is a lack of recognition of graduates beginning skill set, lack of appropriate orientation, and lack of collegial respect from the existing workforce (Charette, Goudreau, & Bourbonnais, 2019; Phillips et al., 2017).

Much of the focus within the literature has been on documenting poor graduate nurse experiences. In a qualitative systematic review, Walker, Costa, Foster, and de Bruin (2017), drew on 13 studies to document the transition of Australian graduate nurses. There has been less focus on transition interventions. In an early review, FitzGerald et al. (2001) examined transition support for new graduates. More recently, Edwards, Hawker, Carrier, and Rees (2015) completed a systematic review of 30 quantitative studies on the effectiveness of support strategies for new graduate transition, and Pertiwi and Hariyati (2019) identified 14 studies in a review on effective orientation programmes in hospital settings. In other systematic reviews, Chappell and Richards (2015) explored the link between new graduate transition programmes and clinical leadership. Hegney et al. (2019) focused on the factors influencing transition to a nursing specialty, and Speight, Firnhaber, Scott, and Wei (2019) reviewed transition strategies for new graduate nurse practitioners. Previous reviews have explored single study types, single practice areas, or transition to specialised areas. No authors have synthesised evidence on outcomes at the graduate, patient or client, or health service level. This review addressed this gap.

METHODS

This review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Ottawa Hospital Research Institute & University of Oxford, 2015). The protocol is registered with PROSPERO - 2018 (Protocol number to be added following review. Blinded for review). The review questions were: What interventions are used to support/facilitate graduate nurse transition? What outcomes have been identified from graduate nurse transition interventions at the individual graduate, patient or client, and health service levels? All quantitative, qualitative, and mixed-methods studies were included if they met the inclusion criteria. Breadth in study type was necessary to ensure a comprehensive exploration and synthesis of the evidence. The population was newly graduated nurses in their first year of practice. Newly graduated nurses are employed in all parts of the health system, so there was no exclusion of studies based on study site. The review's primary outcomes were a) documentation of interventions designed to support/facilitate graduate nurse transition, b) synthesis of evidence of outcomes from these interventions at the individual nurse, patient or client, and health service levels. The date range for included studies was January 1990 – April 2020. Studies were only included from peer reviewed journals in English. We excluded other systematic reviews as our interest was in primary studies, but other reviews were used as background. The English language limitation was pragmatic because of the significant resource implications required for translation (Morrison et al., 2009). Inclusion and exclusion criteria are outlined in Table 1.

INSERT TABLE 1 HERE

Search strategy

An expert healthcare librarian supported the conduct of the search. A preliminary search of two online databases, CINAHL and PubMed, was completed using the initial Boolean search operators: Nurs* OR Grad* AND transition OR entry to practice OR socialisation OR intern OR residence AND programmes OR interventions. The preliminary searches were used to identify additional terms or Medical Subject Headings (MeSH) and modify the search to ensure breadth of capture. The final search strategy is outlined in Table 2.

INSERT TABLE 2 HERE

The full search was conducted in Medline, EmBase, CINAHL, Prospero, Cochrane Library, PsycInfo, and Web of Science (Social Science Citation Index). The searches were imported into Endnote and then Covidence, part of Cochrane's systematic review toolkit.

Following duplicate removal, a four-step process was undertaken. One author independently screened all retrieved articles at the title and abstract stage, with other team members acting as independent second reviewers. Reviewer disagreements were flagged in Covidence as conflicts and were discussed by the team until consensus was achieved. The same process occurred at the full text stage, with team discussion occurring where there were differences of opinion. The reference lists of included studies were hand searched and citations of all included studies checked to ensure search completeness.

In the second stage, the well validated Mixed-methods Appraisal Tool (MMAT) (Hong et al., 2018) was used to assess quantitative, qualitative, and mixed methods studies. The tool allows researchers to assess studies based on 1) the clarity of the original research question, and 2) the appropriateness of the collected data for answering the question. Additionally, four methodologically specific quality dimensions were assessed. To ensure consistency, one author assessed each article, with their assessment checked by the first author. Following recent recommendations for the use of the MMAT (Hong et al., 2018) assessment scores were not applied. The included articles were tabulated against each MMAT criteria. From the final dataset, data extracted included: study population and demographics, setting, methodology and methods, interventions, outcomes, and conclusions. All recordings of data used a standardised data extraction tool.

Data analysis

The first step in data analysis was assessment of the heterogeneity of the studies. There was a diversity of intervention types that were not well described. There was insufficient descriptions of content, different timing and length of interventions, a diversity of study designs, different tools and diverse settings, and poorly described outcomes. Additionally, there were major gaps in reporting across most studies that affected quality assessment and raised questions of bias. These factors prevented any analysis of pooled effect size, so a meta-analysis could not be conducted. Consistent with our research questions, we searched for evidence of outcomes. Again, given the diversity of outcomes and often scant reporting, we were unable to produce sound, evidence-based judgements on the effectiveness of transition interventions.

The focus of our reporting is descriptive to reflect the variety of studies found. Data synthesis followed the approach of Thomas and Harden (2008). Study findings were imported into QSR NVivo with coding of each line of text. Like text were combined into descriptive themes to answer the two research questions: What interventions are used to

support/facilitate graduate nurse transition? What outcomes have been identified from graduate nurse transition interventions at the individual graduate, patient or client, and health service levels?

RESULTS

The search results for this review are outlined in Figure 1.

INSERT FIGURE 1 HERE

Reason for the exclusion of 186 studies at the full-text stage included: no transition intervention, no outcomes, nurses not in their first year of practice, literature reviews, not research studies, theses and full text unavailable. A total of 130 studies were included as the review dataset. The full data extraction table is included as a supplementary file.

Location and publication dates

Of the 130 included studies, 74 were conducted in the United States (US), 25 in Australia, 12 in Canada, nine in the United Kingdom (UK), two each in New Zealand and Korea, and one study each in Saudi Arabia, China, Sweden, South Africa, Taiwan, and Israel. The search criteria included studies from January 1990 to April 2020. However, only one study was published before 2000. This was a US study published on bar mentoring, or intensive coaching, to support new graduate transition (Di Vito-Thomas, 1998). A total of 74 studies or 56.92% were published in the last five years (2015-2020).

Quality of research

A total of 33 studies were qualitative, 67 quantitative and 30 mixed methods. Application of the MMAT indicated that of the 130 studies included, only 49 (37.69%) had a clear research question. Research aims or objectives were found in 81 studies (62.30%). In this review, 113 studies (86.15%) included answers to the research question or aim, 2 studies (2.30%) did not, and in 15 (11.53%) it was impossible to tell. Table 3 presents the MMAT responses for qualitative studies and Table 4 for mixed methods studies.

INSERT TABLE 3 AND 4 HERE

Of the 67 quantitative studies, there were 5 RCTs (7.46%), 9 non-randomised studies (13.43%) and 53 (79.10%) descriptive studies. In the non-randomised studies (n=9) all represented the population of interest but in one, there was no detail about the sampling approach. There were some gaps in the details of confounders with 8 of the 9 studies assessed as unable to tell. In all RCTs (n=5) there were key gaps related to blinding and assessment of outcome data which affected the quality of the results. The largest number of quantitative studies were descriptive (n=53). Table 5 provides details of the MMAT questions as they were assessed.

INSERT TABLE 5 HERE

There were a myriad of data collection methods used across the included studies. The most common validated tool used was the Casey Fink Graduate Nurse Experience Survey (Casey & Fink, 2006). Only a small number of studies clearly reported data collection at multiple data points (Aggar, Bloomfield, Thomas, & Gordon, 2017; Aggar, Gordon, Thomas, Wadsworth, & Bloomfield, 2018; Friday, Zoller, Hollerbach, Jones, & Knofczynski, 2015; Krugman et al., 2006; Kulka, De Gagne, Mullen, & Robeano, 2018; Lima, Newall, Jordan, Hamilton, & Kinney, 2016; Maxwell, 2011; Meyer, Shatto, Delicath, & von der Lancken, 2017; Pelletier, Vincent, Woods, Odell, & Stichler, 2018; Phillips et al., 2017; Sledge, Potter, & Stapleton, 2016; Spector et al., 2015; M. B. Strauss, 2009; Williams, Goode, Krsek, Bednash, & Lynn, 2008). Few authors reported on the collection of data across multiple years (Beecroft, Santner, Lacy, Kunzman, & Dorey, 2006; Casse, 2019; Goode, Lynn, McElroy, Bednash, & Murray, 2013; Hosking et al., 2016; Slate, Stavarski, Romig, & Thacker, 2018). Casse (2019) reported on 14 years of turnover data from a transition orientation programme, Goode, et al., (2013) ten years of research from a residency programme, and Slate et al. (2018) nine years of data from a residency programme. Hosling et al. (2016) collected data from 231 graduates over a five year period. In the study by Beecroft et al. (2006) data were collected from 318 new graduates over the period 1999-2005. There was no evidence of longitudinal studies that looked at the outcomes of transition interventions across the career of a registered nurse.

Sample sizes in the 130 studies varied. A total of 36 studies (27.69%) had a sample size of 20 or less, 32 had 50 or less (24.62%), 23 had samples of under 100 (17.69%), and 33 studies had more than 100 (25.38%). In six studies (4.62%), no sample size was given.

Programme descriptions, length, and setting

Across the included studies, there were a myriad of terms used to describe transition interventions. These included transition to professional practice programmes, residency programmes, orientation track, extended orientation, extended transition programmes, new graduate initiative, graduate retreats, mentoring programme, preceptorship programme, internship programme, entry to practice programme, and structured clinical support. While terms varied, there was commonality across most programmes, with theoretical learning, skills and competency development, preceptorship, mentoring, and employment in a variety of settings commonly described.

There was wide variety in the length of different programmes, from short graduate retreat programmes lasting a few days to the more common one-year programmes (n=77 or

59.23 %). A very small number of studies explored transition support beyond one year. Examples included Gellerstedt et al. (2019) (Sweden) who described a transition programme over eighteen months that included four clinical rotations, visits to different services, training days and time spent in a simulation centre. Goudreau et al. (2015) (Canada) described a continuing education intervention over 24 months. From the US, Moore et al. (2012) described a 12-18 months residency programme, Rivera et al. (2015) a one to two year programme and Varner and Leeds (2012) a four phase programme with an optional year two. In the UK, a two-year programme was offered that included a blended educational programme. There were two authors who published two papers each that described a range of residency programmes with different programme lengths (Kramer, Maguire, Halfer, Brewer, & Schmalenberg, 2013; Kramer et al., 2012; Rush, Adamack, Gordon, Janke, & Ghement, 2015; Rush, Adamack, Janke, Gordon, & Ghement, 2013). No authors described a rationale for programme length.

The vast majority of authors described transition interventions in acute settings. There were only four studies that focused on graduate transition in primary health or community settings, including general practice (Aggar et al., 2017; Aggar et al., 2018; McInnes, Halcomb, Huckel, & Ashley, 2019; T. Thomas, Bloomfield, Gordon, & Aggar, 2018). All were Australian and were published since 2017. Of the 14 studies that focused on transition to practice in speciality areas of practice, 11 were from the US in neuroscience (Ballard, Mead, Richardson, & Lotz, 2012), emergency departments (Casse, 2019), mental health (Jackson, 2018; Pelletier et al., 2018), intensive care/critical care (Kaddoura, 2010; Messmer, Jones, & Taylor, 2004; Schroyer, Zellers, & Abraham, 2016), operating suites (Persaud, 2008), neonatal intensive care/special care (Rivera et al., 2015; Square, 2010), and burns (Robbins et al., 2017). Canadian studies focused on transition in specialist settings included paediatrics (Baumann, Crea-Arsenio, Hunsberger, Fleming-Carroll, & Keatings, 2018). In Australia, specialist settings included paediatrics (Lima et al., 2016), and mental health (Porter, Ham, & Grealish, 2016).

Intervention content

In most studies reviewed, the authors gave scant detail of the transition intervention which made clustering of studies into intervention types an impossible task. Most simply stated that a programme was delivered, with detail of content primarily restricted to delivery approaches such as lectures, seminars, case studies, and reflective practice. Although, just under 50% of authors stated that the transition intervention included preceptorship or mentoring, caution should be taken with interpreting this figure due to scant programme

details provided by many authors. The length of preceptor time was not stated or unclear in many studies.

Some transition interventions were primarily focused on mentoring. As examples, six-month mentoring programs were described by Beaty et al. (2009) in Canada and by Glynn and Silver (2013) in the US. Both of these programmes had very small sample sizes. In the US, Kramer et al. (2012) reported on extended periods of preceptorship/mentoring of over a year to support transition integration. An innovative generational approach to mentoring was described by Verret and Lin (2016). In this US program, new graduates were assigned a peer and veteran mentor. The rationale for this program, included potential benefits for both the new graduate and mentors.

The emphasis of transition interventions in most studies was on the development of technical skills for the acute care environment. A number of authors referred to the incorporation of simulation in their transition programmes. Examples from the US include Everett-Thomas et al. (2015), Friday et al. (2015), Justus and Appel (2018), Kowalski and Cross (2010), Murphy and Janisse (2017), Meyer et al. (2017), Rossler et al. (2018), and Slate et al. (2018). Kaddoura (2010), described a full day of clinical simulation every three weeks across a six month programme. .

There was a small number of studies that had specific foci. As examples, in US studies, there was a strong emphasis on evidence-based practice (Hosking et al., 2016) and leadership, with Luger and Ford (2019) describing an eight-module leadership programme. Only a small number of programmes extended beyond skills and competency to psychological or emotional wellbeing. For example, Kulka et al. (2018) described a mindfulness-based stress reduction programme as a component of an orientation programme.

In the vast majority of studies reviewed, transition activities were included as added on continuing professional development across the transition period. There were only two studies where a transition programme was award bearing. In a study by O'Connor et al. (2018), the state employer in Ireland funded a two-year part-time Postgraduate Certificate in Nursing/Midwifery where participants engaged in blended learning in a tailored programme aligned with their branch of registration. In Australia, Bull et al. (2018) described a Clinical Honours programme where 407 new graduates engaged in a programme for a formal university award that was offered with a broad range of partners.

Outcomes from graduate nurse transition interventions

Of the 130 studies, 74 reported outcomes for the graduate and 55 for the service. Only one study reported any direct outcomes for consumers, clients or patients. Table 6 outlines the numbers of studies and reported outcomes in each sample size grouping.

INSERT TABLE 6 HERE

Sample size of study under 20.

In the 36 studies with samples less than 20, 20 were qualitative, nine quantitative, and seven mixed methods and were largely self-reports by graduates.

Graduate outcomes

While all reported good outcomes for graduates, in many cases there was a lack of detail on how this was ascertained. Where detail was included, authors commonly described outcomes such as critical thinking skills, clinical judgement, problem solving, and confidence (Herdrich & Lindsay, 2006; Kaddoura, 2010; Kelly & McAllister, 2013; Messmer et al., 2004; Stirling, Smith, & Hogg, 2012; T. Thomas et al., 2018). Across the quantitative studies, clinical competence was measured by various tools including the National Practice Standards for Nurses in General Practice, the Six Dimension Scale of Nursing Performance tool (Aggar et al., 2017; Di Vito-Thomas, 1998) or service designed examinations or questionnaires (Ballard et al., 2012; K. Edwards & Connett, 2018). The sample size, in these studies was very small, ranging from four to 18 graduates.

Service outcomes

Service outcomes were primarily focused on improved retention and staff satisfaction with the graduates from transition programs (Casse, 2019; D'Addona, Pinto, Oliver, Turcotte, & Lavoie-Tremblay, 2015; Grealish et al., 2018; Herdrich & Lindsay, 2006; McInnes et al., 2019; Nielsen, Lasater, & Stock, 2016; Olson et al., 2001; Persaud, 2008; T. Thomas et al., 2018). While samples were small, most authors indicate increased retention from various programmes, however, scant detail was provided on how this was measured.

Client/patient outcomes

In a US study by Varner and Leeds (2012), their anticipated outcomes from their residency programme included professional role transition and socialisation, and safe delivery of care. The sample size was small, with only 17 graduates, however, this was the only study reviewed that explicitly described client/patient satisfaction surveys on the care provided by new graduates. Satisfaction surveys indicated that the new graduates were providing outstanding care.

Sample size of study 21 - 50.

In the group of 32 studies that had between 21 and 50 participants, the majority were quantitative (n=17), with seven mixed methods and eight qualitative studies.

Graduate outcomes

Graduate outcomes were reported in 19 studies. Most of the data reported were about increased knowledge across clinical domains, increased communication skills and graduate satisfaction with the programmes (Cleary, Matheson, & Happell, 2009; Everett-Thomas et al., 2015; Holland & Moddeman, 2012; Hussein, Salamonson, Hu, & Everett, 2019; Lima et al., 2016; Marks-Maran et al., 2013). Kulka et al. (2018) was the only study that specifically reported stress reduction from a mindfulness programme.

Service outcomes

Service outcomes were reported in 13 studies. Baumann, Crea-Arsenio, et al. (2018) described better integrated graduates from extended orientation in complex pediatric settings and Phillips et al. (2017) reported service satisfaction in general settings, but these judgements were drawn from qualitative interviews. In a study by Beecroft, Kunzman, and Krozek (2001) attempts were made to calculate return on investment from a one year internship programme. They reported less turnover in graduates who had completed the programme compared to their control group. In US studies, (Crimlisk, 2017; Crimlisk, McNulty, & Francione, 2002; Friday et al., 2015; Pelletier et al., 2018; Robbins et al., 2017; Ward, 2009) high levels of graduate retention were reported but there were no controls. There were a small number of studies with commentary related to satisfaction of preceptors and intention to continue, management satisfaction, reduced staff turnover, improved risk management, and cost savings as a result of transition programmes but evidence was scant (Leigh, Douglas, Lee, & Douglas, 2005; M. Murphy, Petryshen, & Read, 2004; Scott & Smith, 2008; Square, 2010).

Sample size of study 51-100.

Out of a total of 23 studies with samples under 100, the majority were quantitative (n=15) with two qualitative and six mixed methods studies.

Graduate outcomes

Graduate outcomes were reported in 16 studies and outcomes were similar to other studies across this review: improved confidence, clinical skill development, and communication skills, with conclusions drawn mostly from self-reported surveys.

Service outcomes

Of the studies where service outcomes were reported, retention was the most common indicator (Floyd, Kretschmann, & Young, 2005; Goudreau et al., 2015; Jamieson, 2017;

Kowalski & Cross, 2010; Roxburgh et al., 2010). Again, however, data to support service level outcomes was scant. Schroyer et al. (2016) in the US specifically designed a one-year mentoring programme in critical care and reported that mentored graduates were retained at a 25% higher rate than those who weren't. The sample size was 70. In Taiwan, Lee, Tzeng, Lin, and Yeh (2009) measured turnover rate, cost, quality and graduate satisfaction using a variety of tools. They stated that a three-month preceptorship programme reduced turnover rates and costs and reduced medication errors. The study is useful in attempting to measure an impact of a transition intervention on quality indicators, however, the sample size was small (n=24 preceptors and n=34 graduates).

Sample size of study over 100.

In the group of 33 studies with samples above 100, 20 were quantitative, ten were mixed methods and three were qualitative.

Graduate outcomes

Graduate outcomes were reported in 13 studies. Again, themes of increased confidence and competence related to clinical skills and decision making was strong. In a large Canadian study (n=2369 graduates), Baumann, Hunsberger, Crea-Arsenio, and Akhtar-Danesh (2018) compared graduates who had a minimum of 12 weeks of a transition programme with allocation to an experienced registered nurse for supervision (n=1008) with those that didn't (n=1275). They reported statistically significant differences between the groups, with the transition programme group having higher mean scores on level of confidence, comfort, clinical decision making, safe care and competence.

Service outcomes

Service level outcomes were primarily related to retention. Newhouse, Hoffman, Suflita, and Hairston (2007) described a one-year internship programme and stated that one-year retention was higher for those that completed the programme compared to those who didn't. The US study by Pillai, Manister, Coppolo, Ducey, and McManus-Penzero (2018) was one of the few that measured retention beyond the one-year period. They indicated that the loss of graduates was much higher in the second year than the first. Some of the studies with larger samples reported data across a number of years (Beecroft et al., 2006; Slate et al., 2018). In an Australian mixed method study by Bull et al. (2018), telephone interviews were conducted with service representatives on the acceptability of the programme and these were positive. Again, across this group of studies the most commonly reported service outcome was retention, however, the evidence was variable, with retention primarily only reported across the period of the transition intervention. In China, Zhang et al. (2019) reported on a

one-year transition programme and noted significant lower rates of turnover in the intervention group compared to the control, however, rates in the second and third year of practice were no different. Some of the studies were across multiple sites. Examples include Kramer et al. (2013), Kramer et al. (2012), Silvestre (2017), and Williams et al. (2008). Authors (Williams et al., 2008) from one of the largest studies in this review (n=3484 graduates) used secondary data from approximately 102 hospitals in 24 hospital systems across 14 US states to identity outcomes from a standardised Versant® residency programme. They reported highly on one-to-one mentoring. From a random sample of 1088 graduates in a one-year transition programme in the US, Spector et al. (2015) stated that there is substantial evidence that a standardised transition to practice programme improves job satisfaction, reduced work stress, increased retention and fewer patient errors but the programmes might need to be longer than one year.

Of the six studies where no sample size was given, all were quantitative. In the US Cheeks and Dunn (2010) described a graduate retreat programme and reported improved critical thinking, self-care and interpersonal skills among graduates. Krugman et al. (2006), Lysaght and Cadavid (2018), Maxwell (2011), and Ouellette and Blount (2015) reported one year transition programmes. E. Strauss, Ovnat, Gonen, Lev-Ari, and Mizrahi (2016) stated they evaluated a 12-week programme that included clinical and didactic components. All authors reported positive outcomes, but scant detail was provided.

Discussion

The aim of this systematic review was to identify and document graduate nurse transition interventions and outcomes at the levels of the graduate, patient or client, and health service. Effective transition to practice is critical for health systems that are highly dependent on the new graduate pipeline for health workforce sustainability, and safe, high quality care (Pellico, Duffy, Fennie, & Swan, 2012; World Health Organisation, 2016).

The literature is replete with studies that document the challenges that new graduates face as they begin their careers in a profession that is supposedly built on care (Phillips et al., 2017). Given the importance of graduate nurse transition at all levels from individual to the health system, the obsession with documenting poor graduate nurse experiences is understandable. However, there is an urgent need to move beyond a chronicle of challenges to well-designed interventions that facilitate new registered nurses' positive enculturation to the workplace. This review is the first to provide an extensive documentation of transition interventions and identified outcomes.

We aimed to systematically and robustly review transition interventions and outcomes. However, the lack of consistency in terminology used to describe transition or transition interventions was notable and problematic. Few authors defined transition or transition intervention, and most studies lacked a conceptual or theoretical basis for the programmes, programme elements, or strategies that were described.

The vast majority of studies were conducted in acute health settings, with transition interventions heavily focused on technical skill development. Skill competence is essential to quality and safe care, however, there appeared to be little alignment between transition theory and intervention design.

The work of Duchscher (2009), has been the most influential in illustrating the movement of newly qualified nurses through transition phases. The initial *doing* phase is characterised by a steep learning curve, anxiety, self-doubt and transition shock. The emphasis is on the completion of tasks, within rigid routines and navigating complex professional change. In the *being* stage at four to five months, newly qualified nurses experience transition crisis as they search, examine, doubt and question their identities. While knowledge and skills develop, challenges arise as the ideals of undergraduate preparation clash with the realities of the health system. Toward the six-to-eight-month period, new graduates settle and begin the adjustment into their new roles. By the final *knowing* stage, most graduates gain confidence in their roles, and start to consider longer term career plans. Duchscher (2009) argues that interventions to support transition are time sensitive and should be aligned with the new graduate's stage along the transition continuum. The findings of our review suggest that those charged with developing transition interventions were primarily focused on the development of technical skills and pay little attention to any theory on transition stages. The primary outcome from the majority of studies was improved graduate confidence. The lack of heterogeneity of studies, makes it impossible to draw any definitive conclusions whether it was the intervention that increased confidence or the stages of transition.

There is a need for greater conceptual clarity on transition and transition interventions beyond acute care skill development. While transition is commonly described as a process of moving, change, learning, socialisation, and adjustment (Chicca & Bindon, 2019), it was unclear how the breadth of a new graduates professional and personal needs was supported. The diversity of different approaches to transition suggests a lack of conceptual analysis of transition and transition interventions. Ongoing contemporary work must be done to define

critical transition attributes and in turn, these attributes must be aligned to interventions and instruments to measure outcomes beyond merely skill development.

Few authors reported on the development of key capabilities in areas such as conflict resolution, advocacy, interprofessional working, and leadership that is integral for professional practice (World Health Organisation, 2016). The World Health Organisation (2020) recently reinforced the urgent need to develop and nurture new graduates' leadership capabilities.

The review findings clearly show that few authors give any attention to robustly measuring the impact of transition interventions on the service and patients/clients. Given the investment in transition interventions, the lack of studies that measured return on investment in terms of service and patient/client outcomes is difficult to understand and must be addressed.

There was significant variation in quality across the studies. Given that just under 40% of authors stated a clear research question and more than half of mixed-methods studies did not provide an adequate rationale for this approach, there is a need to improve reporting. Most quantitative studies were descriptive, and with few randomised controlled trials, there is scope for further studies that reduce perceptions of bias.

In 2020, the World Health Organisation, stressed the need for graduate nurses to drive primary and community health care as part of interprofessional teams (Baumann, Hunsberger, et al., 2018). In our review, the small numbers of studies conducted in community or primary health settings were concerning. There was a dearth of studies that considered transition as part of wider interprofessional practice. Transition to practice in community and primary health and effective interprofessional working must be addressed.

Only a few authors described transition interventions in specialty areas of practice, and the lack of transition interventions for settings outside metropolitan cites is a major gap. There are significant differences in transition to practice in urban and rural settings. In rural settings, authors have noted heightened expectations of the rural graduate nurse in contexts with little supervision and direction and an absence of medical staff (Kenny et al., 2020). Rural transition programmes must be developed and rigorously evaluated and must address the additional complexity of living and working in a community where ‘rural contextual dynamics’ (Crooks, 2012 p.48) require highly visible nurses to manage complex multiple relationships associated with living where they work. The lack of interventions that addressed the psychosocial implications of transition and the link to professional identify and wellbeing is a significant gap.

While there were studies where authors reported data from evaluations of programmes across a few years, there was a dearth of studies that explored how transition interventions supported longer term career development of registered nurses. Longitudinal studies that measure the impact of transition interventions on registered nurses across their careers would add substantially to knowledge in the field. There were only a tiny number of studies that linked transition programmes with formal award-bearing qualifications. We believe that there is substantial potential to explore transition interventions that align with longer-term career development.

There are differences in health systems between countries, but there is agreement that optimising the health workforce to ensure high quality and safe care is of global concern (World Health Organisation, 2016). Most of the studies reviewed were focused on single study sites within a single country. There is potential to design robust transnational studies that accommodate for differences in how graduates are prepared. An increasingly connected world provides outstanding opportunities for researchers to collaborate across geographic boundaries. Key organisations have stressed the importance of transnational health workforce initiatives (International Council of Nurses, 2017; World Health Organisation, 2020).

We identified a lack of consistency in how transition interventions outcomes were measured. This presents a major challenge for high-quality meta-synthesis and meta-analysis. While the Casey-Fink Graduate Nurse Experience Survey (Casey & Fink, 2006) was most commonly used, and is a well validated tool, it is a self-reported instrument and is heavily weighted toward measuring skill performance within an acute hospital environment. There are no questions that ask the graduate how clients/patients might rate the quality of care that they deliver. There is potential for a group of cross-country researchers to develop international tools to support comparisons within and across countries. Consensus could be built through international surveys, major collaborative workshops, and interaction at leading conferences. Large scale collaborations to develop, validate, and test appropriate tools within countries and transnationally would be critical.

LIMITATIONS

While we aimed to produce a high-quality review, with well described reproducible methods, there is never a guarantee that these methods will capture all research in the field. There are always inherent flaws with systematic reviews associated with search terms, study selection, subjectivity of quality appraisal, and reporting. We acknowledge these limitations but believe that the large international team of experienced researchers that have completed this review has mitigated some limitations. The lack of consistently reported studies and a

myriad of evaluation approaches limits the team's ability to draw definitive conclusions but we have documented evident trends.

CONCLUSION

Previous reviews have focused on single study types, single practice areas, or transition to specialised areas. This review addresses a major gap in the literature by documenting transition interventions in a diversity of health settings and outcomes from these interventions. By including all study types, a richer picture of the current state of evidence emerged. This review indicates that attempts to redress poor new graduate experience are disparate and inadequately reported. Given the ever-increasing interest in transition to practice and the significant financial investment in programmes, programme elements, or strategies designed to support a graduate's transition there is an urgent need to take stock and focus on well designed, robust, and larger scale studies at the national and transnational level. The propensity of researchers working in nurse education to produce more and more research was evident in this review. This approach requires significant disruption. Transition interventions are essential for new graduates, but a growing literature base without strong evidence is neither desirable nor useful. Nursing is a practice-based discipline, and the need to link evaluation of transition interventions with nurse, service, and client outcomes should be an urgent priority.

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