Retention of Registered Nurses: A Brief Report on Interventions to Increase Retention in the Nursing Workforce

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INTRODUCTION

North Carolina (NC) is projected to face a shortage of almost 12,500 registered nurses (RNs) by 2033.[1] A 2023 survey of more than 1,000 NC health care facilities and 80 education programs conducted by the NC Health Talent Alliance found that 1 in 6 RN positions in the state were unfilled.[2] Nationwide, RN staffing intensity (the ratio of RNs to other nursing personnel) in hospitals has decreased since 2021, consistent with findings from Auerbach et al. (2024) which suggest that although overall nurse supply in the United States is increasing, most of the growth is taking place outside of hospitals.[3]

A recent report by NSI Nursing Solutions (2025) estimated a cost of $61,110 for turnover of one bedside nurse and a three-month timeframe to recruit an experienced RN.[4] However, research by Jones (2008) estimated an even higher cost of nurse turnover, ranging from $82,000 to $88,000 depending on RN experience.[5] Although estimates of the cost of nurse turnover vary depending on the methodology used, nurse turnover is costly and hiring a new RN is time consuming.[6] Factors associated with nurse turnover include burnout, insufficient staffing, inadequate compensation and benefits, lack of professional development opportunities, issues with workplace culture and management, safety concerns, and health/mental health related concerns.[7,8] In NC, a recent analysis examining exits from the NC RN workforce found that the percent of nurses who left the workforce increased from 13.9% in 2019 to 15.1% in 2023.[9] Given the cost associated with nurse turnover, this increase in exits from the NC RN workforce requires attention.[10]

International calls have been made to prioritize programs and strategies to recruit and **retain** nurses in the workforce.[11-13] Within NC, the 2024 NC Institute of Medicine (NCIOM) nursing workforce report[14] outlined several strategies to sustain and retain nurses in the NC workforce, including strategies that can be implemented within nursing units and more broadly at the organizational level:

- identifying opportunities for nurses to participate in educational advancement, leadership, mentoring, and preceptorship
- decreasing the experience of high workload and documentation burden for nurses
- strengthening nurse transition to practice efforts and early career development across all care delivery settings
- protecting nurses from violence in the workplace
- increasing awareness and support for the mental health of nurses
- creating robust systems that involve nurses as leaders in decision making

This brief summarizes the results of a review of systematic reviews focused on nursing retention interventions that have been quantitatively evaluated. In this brief, we summarize findings from the literature on retention interventions and discuss their implications for NC RN workforce partners such as employers, policy makers, NC AHEC, and the NC Center on the Workforce for Health, who have an interest in promoting methods to retain the NC nursing workforce.

METHODS

This review focused on systematic reviews and meta-analyses in English published after 2020 that quantitatively measured nursing turnover, intention to stay or leave, and retention. The research team, which included a health sciences librarian, conducted literature searches in CINAHL Plus with Full Text (EBSCO*host*), Cochrane Database of Systematic Reviews, PubMed, and Scopus (Elsevier) using multiple relevant subject headings (e.g., "healthcare worker retention" or "turnover") and key words (e.g., "retention," and

"interventions," AND "nurse"). The original searches yielded 1,453 articles which were reviewed by the research team. First, two researchers independently screened the titles and abstracts for inclusion and exclusion criteria. Studies were included if: 1) the study subjects included nurses; 2) the intervention's purpose focused on nurse retention; 3) the study's context was within healthcare; 4) and the outcomes included a quantitative measurement of retention. Exclusion criteria applied included: 1) systematic reviews that included qualitative-only research; 2) scoping reviews; 3) studies on students 4) studies on graduate nurses (not yet licensed); 5) studies on nursing faculty; 6) studies on advanced practice registered nurses; 7) and studies on more than one healthcare clinician. Next, the same researchers independently screened 17 full-text references for inclusion and resolved any discrepancies through discussion. The final sample included six systematic reviews published between 2020 and 2024. The research team extracted data from each review including author(s) name, year of publication, review objective, setting type, level of intervention (unit-level or organizational-level), number of quantitative studies that measured retention, measure(s) of retention, and findings.

FINDINGS

The final sample of six reviews[15-20] represent 67 studies that measured nurse turnover, intention to stay or leave, and retention. While all reviews included studies of nurse outcomes in hospitals, only one review (Mohamed & Al-Hmaimat, 2024) included a study of retention in long term care settings.[21] Retention was not consistently measured or reported across studies in the reviews. Measures of retention included turnover intention, intention to leave, and intention to stay using a variety of validated and researcher-created survey tools (Table 1).

Table 1. Systematic Review Characteristics

Author(s)	Published year	Number of quantitative studies	Review objective	Nursing setting type	Intervention	Level of Intervention	Tools for measuring workforce outcomes	Workforce outcomes
Aparício & Nicholson[15]	2020	2	To determine if there is evidence to support preceptorship and clinical supervision programs in retaining nurses, and particularly newly qualified nurses (NQNs), in clinical practice.	Hospital-based settings	Clinical supervision program; Preceptorship program	Organizational	Validated 26-item Manchester Clinical Supervision Scale (MCSS) and Site coordinators tracked at one year after the hire date, each newly licensed RN was coded as retained, left voluntarily, or left involuntarily (injury or termination).	Intention to stay Retention rate
Conroy et al.[16]	2023	12	To synthesize the relationship between transformational leadership style and staff nurse retention in hospital settings.	Hospital-based settings	Transformational Leadership (TL)	Unit	McCain's Intent to Stay Scale (n=2), O'Driscoll and Beehr Scale (n=2), Intention to stay Scale (n=2), Affective Commitment Scale (n=1), Organizational Commitment	Intention to leave Turnover intention

Author(s)	Published year	Number of quantitative studies	Review objective	Nursing setting type	Intervention	Level of Intervention	Tools for measuring workforce outcomes	Workforce outcomes
							Questionnaire (n=1), Anticipated Turnover Scale (ATS) (n=2), Turnover intention scale (n-1), Six-item turnover intention scale (n=1).	
Galanis et al.[17]	2024	8	To synthesize and evaluate the association between organizational support and turnover intention in nurses.	Hospital-based settings	Organizational support	Unit	Turnover Intention Scale (n=33), Self-developed scales (n=5)	Turnover intention

Author(s)	Published year	Number of quantitative studies	Review objective	Nursing setting type	Intervention	Level of Intervention	Tools for measuring workforce outcomes	Workforce outcomes
Mohamed & Al-Hmaimat[18]	2024	5	To determine the effect of successful completion of Nurse Residency Program on new nurses' retention rates compared with new nurses who missed the Nurse Residency Program	Hospitals (4), long-term care facility (1)	Nurse residency program	Organizational	Not stated	Turnover rate Retention rate
Vázquez-Calatayud & Eseverri-Azcoiti[19]	2023	9	To identify effective interventions that promote the retention of newly graduated registered nurses in the hospital setting and their components.	Hospitals	Combined [residency with one-to-one mentoring (n= 4)], residency programs (n= 3) and individualized mentoring (n= 1), as well as diversified adaptive education [Instruction tailored to the	Organizational	Survey turnover intention (n=2) Intention to stay survey (n=1)	Retention rate Turnover rate Intention to stay Turnover intention

Author(s)	Published year	Number of quantitative studies	Review objective	Nursing setting type	Intervention	Level of Intervention	Tools for measuring workforce outcomes	Workforce outcomes
					skills, needs, and interests of NGRNs based on learning styles (n= 1)].			
Woodward & Willgerodt[20]	2022	31	Examine current data on RN work outcomes for study quality, methods, and variables with specific attention to the inclusion of concepts related to equity and wellness.	Varied. Hospitals (10/34) or several hospitals within a region or system (9/34). Programs/hospitals across several states (6/34), secondary analysis of national dataset.	Nurse residency program (n=3), organizational support (n=2)	Organizational Unit	Anticipated Turnover Scale (ATS)	Intent to leave Intent to stay Retention rate Turnover rate

Nine themes emerged that focused on unit-level (implemented within the nursing unit) and organizational-level (implemented organization-wide) interventions to influence retention. Table 2 outlines the identified themes which were used to synthesize the findings. Unit-level interventions included transformational leadership (Conroy et al., 2023) and organizational support (rewards, favorable job conditions, assistance to perform tasks efficiently and manage stressful situations, support from the supervisor, meaningful recognition, shared decision making, and increased leadership involvement and support, and teamwork) (Galanis et al., 2024; Woodward & Willegerodt, 2022). Organizational-level interventions included preceptorship programs, clinical supervisor programs (Aparício & Nicholson, 2020), nurse residency programs (Mohamed & Al-Hmaimat, 2024; Vázquez-Calatayud & Eseverri-Azcoiti, 2023; Woodward & Willegerodt, 2022), adaptive education, individualized mentoring programs, combined residency and meeting points, best-fit orientation (Vázquez-Calatayud & Eseverri-Azcoiti, 2023), and organizational support (Magnet status and affiliation with an academic university) (Woodward & Willegerodt, 2022). Notably, all organizational level interventions identified by this review focused on new graduate registered nurses (NGRNs).

Table 2. Unit-Level and Organizational Level Interventions

	Theme	Reference(s)
Unit-level Interventions	*Transformational Leadership*	Conroy et al., 2023
	Organizational support	Galanis et al., 2024; Woodward & Willegerodt, 2022
Organizational-level Interventions	*Preceptorship programs*	Aparício & Nicholson, 2020
	Clinical supervisor programs	Aparício & Nicholson, 2020
	Nurse residency programs	Mohamed & Al-Hmaimat, 2024; Vázquez-Calatayud & Eseverri-Azcoiti, 2023; Woodward & Willegerodt, 2022
	Adaptive education	Vázquez-Calatayud & Eseverri-Azcoiti, 2023
	Individualized mentoring programs	Vázquez-Calatayud & Eseverri-Azcoiti, 2023
	Combined residency and meeting	Vázquez-Calatayud & Eseverri-Azcoiti, 2023
	Best-fit orientation	Vázquez-Calatayud & Eseverri-Azcoiti, 2023
	Organizational support	Woodward & Filigreed, 2022

Unit-Level Interventions (implemented within nursing units and focused on retaining the existing nursing workforce)

Transformational leadership (TL) is a supervisor's ability to inspire a shared vision, encourage innovation, recognize individual contributions, and create a sense of purpose and belonging within a team to facilitate the accomplishment of work. This leadership style includes four main components: 1) idealized influence (acting as a role model to establish trust and respect), 2) inspirational motivation (enabling staff to achieve organizational and personal goals), 3) intellectual stimulation (encouraging staff to develop new ideas and pursue continuous learning opportunities), and 4) individualized consideration (encouraging staff through support and positive feedback).[16] Supervisors demonstrate a transformational leadership style by connecting employee interests with the overall interests of the organization, role-modeling, and supporting employees in the development of strengths. Conroy et al. (2020) conducted a review of twelve studies that assessed the relationship between TL and nurse retention. Eleven of the 12 studies demonstrated a positive correlation between TL and nurse retention in hospital setting. Only 1 study (Abualrub & Alghamidi, 2012) found a statistically insignificant relationship between TL and nurse retention. The review noted further research is necessary to investigate which specific components of the TL style are significantly related to staff retention (Conroy et al., 2020).

Organizational support includes efforts to create a work environment that meets the professional and personal needs of the nurse. Components include employer-specific culture, working conditions, resources, and benefits in place to enable an employee to perform responsibilities efficiently, safely, and which contribute to the professional advancement of the employee. Unit-level examples include adequate staffing and workload flexibility, supervisory

support, work schedules that promote healthy work-life balance, resources to protect the safety of the employee, opportunities for continuing education and job advancement, and assistance with managing stressful situations. Perceived organizational support includes a nurse's overall perceptions and beliefs of how an organization values and respects their contributions, and cares about their well-being and job satisfaction.[17] In a review of the association between organizational support and turnover intention of nurses, Galanis et al. (2024) analyzed eight studies which used the Survey of Perceived Organizational Support (N=7) and the Perceived Organizational Support – Simplified Version Scale (N=1) to measure organizational support. Turnover intention was evaluated using the Turnover Intention Scale (N=3), or other validated researcher-developed scales (N=5). All studies showed a negative correlation between organizational support and turnover intention. The pooled correlation coefficient was −0.32 (95% confidence interval: −0.42 to −0.21), a moderate negative correlation showing that as organizational support increases, nurse turnover intention decreases.

Organizational-Level Interventions (organization-wide interventions focused on new graduate nurses)

In their review of six studies of preceptorship and clinical supervision programs, Aparício and Nicholson (2020) found that preceptorship programs and clinical supervision programs have a positive relationship with the NGRN retention rate (Table 2). *Preceptorship programs* partner an NGRN with an experienced nurse who provides performance evaluations, role-modeling, and support as needed. These programs range in length (12 weeks to 12 months), structure (ex: one day/month or all shifts for six months), and may be included among other components of NGRN residency programs. Retention rates reported in one study within the review found 86% (n=596/693) of NGRNs were retained from high preceptor support (HPS) hospitals compared to 80% (n=545/682) of NGRNs retained from low preceptor support (LPS) hospitals.[22] High preceptor support hospitals are hospitals that provide full support for both preceptees and preceptors (preceptees frequently worked with the preceptor, had different preceptors daily, had one-to-one support and shared workloads, and preceptors benefited from having a reduced workload, a smaller number of preceptees, and the opportunity to frequently work with preceptees). Low preceptor support hospitals provided less support than high preceptor support hospitals.[22] *Clinical supervision programs* support NGRNs by providing support through clinical teaching, buddying, and facilitating professional development over a 12-month period. Hussein et al. (2019) conducted a survey of 87 NGRNs toward the end of a clinical supervision program using the Manchester Clinical Supervision Scale (MCSS) and Intention to Stay in a Clinical Specialty survey.[23] After controlling for age, workload expectations, and satisfaction with practice environment, nurses with high satisfaction of clinical supervision had nearly 4 times the odds of intending to remain in the critical care unit (AOR: 3.861, 95% CI: 1.320-11.293) while nurses who had high satisfaction with their unit orientation also had almost 4 times the odds of intention to remain in the critical care unit (AOR: 3.629, 95% CI: 1.236-10.659).

Vazquez-Calatayud & Eseverri-Azcoiti (2023) reviewed 9 studies to identify interventions that promote the retention of NGRNs and concluded that 1-year nurse residency and individualized mentoring programs, addressing core competencies (ex: communication, teamwork, clinical leadership, critical thinking, conflict resolution), specific competencies (ex: specific procedures or techniques), and including preceptorship or mentorship significantly decrease the likelihood of nurse turnover.[19] These findings are aligned with the review by Woodward and Willeroudt (2022) which found NGRN training programs to improve retention rates of NGRNs within the first few years of practice[20] and the review of by Mohamed & Al-Hmaimat (2024) which concluded that NGRN programs have potential to improve retention rates during the initial 12 months of employment, even within long term care settings.[18] Programs designed to onboard and retain NGRNs vary in composition. *Best-fit orientation* for new graduate nurses is a personalized onboarding approach that aligns orientation content, clinical experiences, and support systems with the individual nurse's background, strengths, learning style, and career goals.[24] This strategy aims to improve engagement, confidence, and clinical readiness during early stages of clinical practice. *Diversified adaptive education* designs instruction of the NGRN based on the skills, needs and learning styles of the NGRN.[25] *Individualized mentoring programs* establish a one-to-one, long-lasting nurturing relationship between a mentor and mentee support the NGRN transition to practice.[26] *Nurse residency programs* are designed to offer NGRNs in-patient orientation with a preceptor and structured education on core competencies necessary for clinical practice.[27] Components may include a period of in-patient orientation with core and service-specific competencies, a preceptor, formal mentoring, debriefing, and self-care sessions. *Combined residency and meeting points* include residency programs with regularly scheduled, structured check-ins or touchpoints between the new nurse and key support figures (e.g., preceptors, mentors, educators, or

managers).[28,29] These meetings are strategically designed to monitor progress, provide feedback, address concerns, and offer emotional and professional support. Significant improvements in turnover and retention rates were found in two studies that included a combined program as an intervention.[28,29] Woodward and Willgeroudt's (2022) systematic review of 31 articles related to RN turnover and retention in the United States identified organizational-level supports that impact NGRN work outcomes. Specifically, retention rates of NGRNs were greater in hospitals with Magnet accreditation (92%) than non-Magnet accreditation (77%) and hospitals affiliated with a university also had higher retention of NGRNs (88%) than those without university affiliation (82%).[30]

Table 3. Systematic Review Nurse Work Outcome Findings

Author(s)	Published year	Findings
Aparício & Nicholson[15]	2020	**Evidence exists that preceptorship programs and clinical supervision programs may have a positive relationship with nurse retention.** • 86% (n=596 out of a total of 693) of new graduate registered nurses (NGRNs) were **retained** from high preceptor support (HPS) hospitals. • 80% (n=545 out of a total of 682) NGRNs were retained from low preceptor support (LPS) hospitals. • Predictors of new graduate nurses' **intention to stay** in their current ward/unit were not having to practice beyond personal clinical capability and working in a critical care specialty. • Further analysis of those nurses who indicated an **intention to remain in critical care** revealed that high satisfaction with clinical supervision and high satisfaction with unit orientation were significant predictors.
Conroy et al.[16]	2023	**Evidence exists that transformational leadership (TL) may have a positive relationship with nurse retention.** • Eleven out of 12 studies demonstrated a positive relationship between TL and nurse retention. • Specific retention rates were not reported. One study in the review reported the relationship between TL and staff retention to be statistically insignificant. • Further research is needed to assess which specific components of TL (idealized influence, inspirational motivation, intellectual stimulation, individualized consideration) are significantly related to retention.
Galanis et al.[17]	2024	**As organizational support increases, turnover intention decreases.** • There is a moderate negative correlation between organizational support and turnover intention. • The pooled correlation coefficient was −0.32 (95% confidence interval: −0.42 to −0.21).
Mohamed & Al-Hmaimat[18]	2024	**All studies showed nurse residency programs have a positive impact on lowering turnover rates and increasing retention rates.** • Miller et al. (2023): Retention rate of nurse residents was 77.27% for the three cohorts enrolled in 2016, 90.20% for the three cohorts enrolled in 2017, 89.71% for the cohort enrolled in 2018. • Failla et al. (2021): The 117 nurse graduates who completed the residency program had a retention rate of 85% at 12 months. Since the inception of the nurse residency program, the 1-year retention >96% (n = 241). • Salmond et al. (2017) conducted a study of nurse residencies in 36 **long term care facilities** and showed an 86% retention rate for the first 12 months of employment (compared with 53.8% retention rate prior to implementation of the programs). • Pillai et al. (2018): 212 nurses were retained after one year (retention rate of 96%).

Author(s)	Published year	Findings
		• Wolford et al (2019): five hospitals with control group (n= 791) NGRNs hired prior to the nurse residency program (NRP) and an intervention group (n= 232) NGRNs enrolled in an NRP. There was a significant decrease in turnover for the group who participated in the NRP: 14% turnover among the control group (86% retention rate) compared to 3.5% turnover among the intervention group (96.5% retention rate).
Vázquez-Calatayud & Eseverri-Azcoiti[19]	2023	**1-year nurse residency and individualized mentoring programs, addressing core and specific competencies and including preceptorship or mentorship, significantly decrease the likelihood of nurses' turnover rate** • The likelihood of retention of nurses in combined programs which address core and specific competencies, including preceptorship, coordinator and mentoring support, is higher (but not statistically significant). • Significant improvements in turnover and retention rates were found in two studies that included a combined program as an intervention: the quasi-experimental study with a control and intervention group by Hu et al. (2015) and the quasi-experimental study with a single group by Koneri et al. (2021).[28,29]
Woodward & Willgerodt[20]	2022	**Work outcomes are impacted by individual-level, unit-level, and organizational-level factors. Unit-level and organizational-level <u>interventions</u> identified.** • Retention rates of 83%[30] and 100%[31] were found for NGRN programs in three different studies (two studies used the same data set so retention rates were 83% and 100%). **Unit Level** • Staffing and workload had significant associations with retention outcomes (Kagwe et al., 2019; Park et al., 2016; Perry et al., 2018; Phillips, 2020; Viotti & Converso, 2016).[32-36] • Studies in the review also linked nurse retention outcomes to job features such as nursing practice/autonomy or scheduling (Carthon et al., 2021; Medas et al., 2015; Park et al., 2016; Perry et al., 2018).[33,36-38] **Organizational Level** • Eight of the included studies assessed the impact of organizational factors on RN work outcomes. • Higher retention rate of NGRNs (Blegen et al., 2017) occurred in organizations with Magnet designation than those without. Organizations affiliated with academic universities also had increased retention rates.[30] • Facilities with established NGRN training programs experience the lowest 1-year turnover rates compared to those with newer programs or no program at all.

CONCLUSION

While expanding enrollment and graduates from nursing programs is an important component of increasing the supply of nurses in the NC workforce, findings from NC Nursecast demonstrate that efforts to retain our existing nurse workforce are even more important.[10,39,40] This report provided an overview of research that quantitatively assessed interventions to increase nurse retention. Heterogeneity in the interventions implemented and the tools used to measure retention limit our ability to identify best practices. Galanis et al. (2024) had similar findings in their systematic review and noted that rigorous research is still required to identify *best practices* in retaining nurses. However, the nine overarching intervention themes identified in the literature showed positive impacts on nurse retention and support the NCIOM-recommended interventions for nurse retention in NC. The unit-level interventions identified (transformational leadership and organizational support) are applicable to nurses throughout their career and are focused on strategies that employers could implement to retain nurses. The organizational-level interventions identified in this review (preceptorship programs, clinical supervisor programs nurse residency programs, adaptive education, individualized mentoring programs, combined residency and meeting points, and best-fit orientation, and organizational support) are specifically targeted to NGRNs and could be implemented by collaborations between nursing employers and educators in the state.

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