

EVALUATION OF RETENTION AND SATISFACTION AMONG NEW
GRADUATE NURSES PARTICIPATING IN
A NURSE RESIDENCY PROGRAM

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Dedication and Acknowledgements

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Abstract

BACKGROUND: The shortage of registered nurses (RNs) in the United States (US) that existed prior to the COVID-19 pandemic is expected to worsen over the next ten years as a result of fewer numbers of practicing nurses, students, faculty, and clinical preceptors/sites as well as decreased funding for educational programs. The full impact of the pandemic is not yet known, but is anticipated to make a significant negative impact on the nursing workforce. Efforts to improve nurse retention and satisfaction are essential for health care organizations to decrease vacancies, turnover, and costs, as well as to improve patient safety. **PURPOSE:** The purpose of this project was to evaluate retention and satisfaction among new graduate RNs participating in a nurse residency program (NRP). **METHODS:** Casey-Fink Graduate Nurse Experience Survey (revised) results from NRP participants in the Summer 2020-2021 cohort were analyzed at 1, 4, and 11 month intervals to examine their levels of job-related comfort/confidence and job satisfaction. Retention rates were compared to the previous year's cohort. **RESULTS:** Respondents reported high levels of overall job-related comfort/confidence upon entry into the NRP; levels decreased as they began practice and surpassed entry levels by completion of the one-year program. Throughout the program, they showed the greatest levels of comfort/confidence in factors related to professional satisfaction and communication/leadership, with the least seen in their organization/prioritization abilities. Retention at the conclusion of the program was lower for this group as compared to previous years. **CONCLUSION:** Respondents report high levels of overall job-related comfort/confidence and satisfaction upon completion of the NRP, however areas for growth, such as in organization and prioritization, were found to be potential areas for NRP refinement. Retention rate was demonstrated to be lower when compared to previous cohort and NRP goals. Additional study looking at elements contributing to these

findings, including the effects of COVID-19, may provide greater insight for future improvements.

Keywords: Nurse residency programs; new graduate nurse; comfort; confidence; satisfaction; retention

Background and Significance

Registered nurses (RNs) make up the majority of workers in today's healthcare system (Smiley et al., 2021). The profession is consistently listed among those with the highest opportunities for job growth, with the most recent projections issued by the Bureau of Labor Statistics (BLS) forecasting employment to grow from 3.1 million RNs in 2020 to 3.35 million in 2030 (2021). This rate of growth is faster than the average for all healthcare occupations and is felt to result from increased demand for services due to the aging baby-boomer population as well as growing rates of chronic diseases and an increased focus on preventive care among Americans (BLS, 2021). Unfortunately, paralleling this positive outlook is a growing shortage of available RNs to fill those positions.

According to the United States Registered Nurse Workforce Report Card (Zhang et al., 2018), the current nursing shortage is increasing and expected to continue to increase through 2030 with over half a million open RN positions expected at that time. Reasons contributing to this shortage involve fewer students enrolling in nursing programs, inadequate number of available faculty to teach nursing students, limited clinical resources including sites and preceptors, and decreases in funding for nursing programs (AACN, 2020). The average age of the RN in clinical practice is also rising. The 2020 National Nursing Workforce Survey found that the average age of the RN is 52 years (Smiley et al., 2021) with estimates projecting more than 1 million RNs plan to retire by 2030 (Buerhaus, Auerbach, & Staiger, 2017). Reductions in the number of available RNs result in increased workloads and longer working hours, which combined with increased patient acuity, can have profound negative impacts on RNs leading to burnout, increased turnover, and reductions in quality patient care (AACN, 2020; Zhang, 2018). Not incorporated in these estimates include the direct and indirect effects of the COVID-19

pandemic that befell the world in Spring 2020. The full impact of the pandemic is not yet known, but by most reports is anticipated to make a significant negative impact on the nursing profession including issues related to education, recruitment, staffing, training and upskilling, as well as retention for years to come (Chan et al., 2021; NAM, 2021).

Improving nurse retention is essential for health care organizations to help safeguard against these trends and to ensure that patients have access to safe, quality nursing care. As outlined in the 2021 Nursing Solutions Inc.'s (NSI) National Health Care Retention Report, the turnover rate for bedside RNs was 18.7% in 2020, with turnover defined as the rate in which nurses leave the organization and are replaced (NSI, 2021). This rate is even higher among new RNs whose turnover rate was noted at 23.9% within their first year (NSI, 2021). Research examining the retention rates of NGNs aligns with these statistics with a one-year retention rate among newly licensed RNs reported at 83% (Blegen, Sector, Lynn, Barnsteiner, & Ulrich, 2017). In addition to the detrimental effect on patient care, turnover can have a significant impact on the hospital's financial margins. The cost associated with the loss of a single bedside RN ranges from \$28,400 to \$51,700 and leads to the average hospital losing between \$3.6 – \$6.5 million annually (NSI, 2021).

Specific to new graduate nurses (NGNs), a solution to assist in the reduction of such turnover has been proposed with the advent of nurse residency programs (NRP), which have been found to aid in improving job satisfaction, retention, and feelings of increased support (Anderson, Linden, Allen, & Gibbs, 2009; Asber, 2019; Olson-Sitki, K., Endler, M.C., & Forbes, G., 2012; Wierzbinski-Cross et al., 2015; Cline, Edwards, Hawker, Carrier, & Rees, al., 2017). The intent of NGN NRPs is to help ease the transition of the NGN from that of a student in the academic setting to the role of the newly licensed nurse in their first professional nursing

position. Many NGNs report not feeling adequately prepared for what they encounter in the hospital environment as a new registered nurse (RN) with high patient acuity, increased workloads, and an ever-increasing complex health care environment (Fink, Krugman, Casey, & Goode, 2008; Twibell & Pierre, 2012; Ackerson & Stiles, 2018). They rate themselves being comfortable and confident as they enter professional practice, but see declines in these measures during their first year of practice, with lowest levels reported at six months and highest levels at twelve months as they gain experience and improved critical thinking abilities (Casey, Fink, Krugman, & Propst, 2004; Cochran 2017). NGNs feel that while their academic programs helped in their career preparation, there was much that they encountered upon entering the workforce that they were not equipped for including how to talk to physicians or manage difficult patients (Fink, Krugman, Casey, & Goode, 2008; Brown, Hochstetler, Rode, Abraham, Gillum, 2018). These, along with other elements, can lead to increased stress levels resulting in higher turnover among NGNs and decreases in levels of job satisfaction (Casey, Fink, Krugman, & Propst, 2004; Fink, Krugman, Casey, & Goode, 2008; Ackerson & Stiles, 2018). NRPs help address these issues by providing the opportunity for NGNs to develop much needed workplace related knowledge and skills as well as build support networks with their peers and mentors to help bridge practice gaps (Fink, Krugman, Casey, & Goode, 2008; Ackerson & Stiles, 2018). Support for these programs can also be found in the Institute of Medicine's, now National Academy of Medicine's (NAM), sentinel 2010 *The Future of Nursing* report detailing recommendations aimed at leading change and advancing the health of the nursing profession (NAM, 2010).

Purpose Statement

The purpose of this project was to evaluate the impact of a new graduate nurse (NGN) nurse residency program (NRP) at a healthcare system in the southeastern United States. The

specific aim of the project was to examine retention and satisfaction among the Summer 2020-2021 cohort of participants at 1, 4, and 11 months by analyzing information about participant's self-reported job-related comfort/confidence and satisfaction levels.

Literature Review

The purpose of this review was to synthesize the existing literature examining the benefits of new graduate nurse (NGN) nurse residency programs (NRPs), specifically how they impacted retention and job satisfaction among their participants. Search engines used to complete the literature search included PubMed (MEDLINE), Embase, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Search terms were organized around three major headers: workforce, transition to practice, and outcomes, and included terms such as new graduate registered nurses; newly licensed registered nurses; entry to practice; role transition; training; orientation; onboarding; nurse residency; mentorship; competence; confidence; satisfaction; retention; and turnover. Inclusion criteria included research studies conducted within the twelve-year period from 2008-2020; written in the English language; published in peer-reviewed, scholarly journals; and examined NGN retention programs. Upon searching the key terms, more than 40 results were returned which were further refined based on the outcomes of comfort and confidence, competence, satisfaction, retention, and to ensure alignment with the project's purpose. This led to the inclusion of 19 articles for this evidence review.

Through this literature review, three key themes emerged. The first was related to the positive benefit of NRP participation on elements of NGN practice such as increased job-related comfort and confidence levels. The second theme that emerged was increased job satisfaction in

NGNs who participated in NRPs. Finally, the third theme was related to higher rates of NGN retention.

NGN Comfort and Confidence

The first theme that emerged from the research focused upon the positive benefit of NRP participation on the NGN related to job-related comfort and confidence. Merriam Webster (n.d.) defines comfort as "contented well-being" and confidence as "the quality of state of being certain." Within the context of nursing practice, confidence can also be defined as the "internal feeling of self-assurance and comfort, as well as being tested and/or reaffirmed by other nurses, patients, and friends" (Crooks, Carpio, Brown, Black, O'Mara, & Noesgard, 2005, p. 361). It can be influenced by personal as well as professional contributors and impacts multiple aspects of nursing care including relationships with peers, patients, and other members of the interprofessional team (Capper, 2008). These terms are often linked together as 'comfort/confidence' when identifying characteristics essential for development by NGNs during their transition from student to professional nurse.

Research that examined job-related comfort/confidence levels among NGNs participating in NRPs saw associations with higher job satisfaction and high retention rates of 90-94% with increases in reported NGN comfort/confidence (Goode et al., 2009; Medas et al., 2015). NGNs participating in NRPs demonstrated increases over time in both composite comfort/confidence scores, as well as factors related to specific nursing skills and qualities (Goode et al., 2009; Kowalski & Cross, 2010; Medas et al., 2015; Cochran 2017). Increases were seen in NGNs' organization/prioritization scores as well as scores related to communication/leadership upon completion of the NRP, indicating increased NGN comfort/confidence in these areas (Goode et al., 2009; Kowalski & Cross, 2010; Olson-Sitki et al., 2012; Cline et al., 2017). In a retrospective

analysis performed by Cline et al. (2017), improvements in communication/leadership and organization/prioritization demonstrated the most improvement over a ten year period of time, thus supporting the value of NRPs in improving comfort/confidence among NGNs. Areas where NGNs reported lower overall comfort/confidence were found in scores related to support, including having unrealistic job expectations and in the amount of feedback and support received from managers (Medas et al., 2015; Cline et al., 2017). Professional satisfaction scores showed a decline following the time of NRP entry in some studies (Goode et al., 2013; Cline et al., 2017). High levels of comfort/confidence were seen at 6 and 12 months among NGNs participating in some NRPs (Olson-Stiki et al., 2012), suggesting that NRPs help support NGNs at the 6 month mark where these measures tend to be lower (Casey et al., 2004).

NGN Job Satisfaction

Job satisfaction was another element that emerged as having an overall positive impact through participation by NGNs in NRPs. Increases in levels of job satisfaction were seen above baseline in multiple studies at the completion of the 12 month NRP (Fink et al., 2008; Anderson et al., 2009; Goode et al., 2009; Meyer Bratt & Felzer, 2011) with one longer term analysis showing continued levels of increased satisfaction at the 24 month mark (Meyer Bratt & Felzer, 2011). Three of the studies showed no change in satisfaction with high levels reported at baseline and throughout evaluation (Altier & Krsek, 2006; Maxwell, 2011; Olson-Sitki et al., 2012). In contrast, two studies found decreased job satisfaction at 6 months with a rebound approaching baseline by 12 months and a further increase by 18 months of NGN practice (Goode et al. 2009; Medas et al., 2015). This follows similar trends reported in the nursing literature related to the six-month mark being one of the most stressful times in the NGN's practice with corresponding decreases in job satisfaction (Ackerson & Stiles, 2018). A single study showed moderate, but

significant, decline in job satisfaction throughout the course of the NRP over several cohorts, which could have been influenced by the lack of program consistency among cohorts due to program evolution (Cline et al., 2017).

The variable composition of NRPs play a role in differences found in job satisfaction among NGNs in different NRPs. Rush et al. (2015) found that satisfaction scores were higher in those NGNs who participated in NRPs that contained longer orientation programs (of 4 weeks or greater duration) or those who had a formal transition program compared to those that were shorter or had a less structured transition. Interestingly, there was no statistically significant difference seen between the amounts of preceptorship included in the NRP and the participants' job satisfaction scores (Rush et al., 2015). Across all the studies, features that were identified as satisfiers included feelings of caring for/helping patients improve (Fink et al., 2008; Anderson et al., 2009; Medas et al., 2015) and teamwork/sense of belonging (Fink et al., 2008; Anderson et al., 2009). Dissatisfiers noted were ineffective teamwork (Anderson et al., 2009; Meyer Bratt & Felzer, 2011), scheduling/staffing concerns (Anderson et al., 2009; Meyer Bratt & Felzer, 2011; Medas et al., 2015), and challenging interprofessional relationships including those with physicians (Fink et al., 2008; Anderson et al., 2009; Meyer Bratt & Felzer, 2011).

NGN Retention

The literature reflects improvements in NGN retention rates, both as compared to national averages as well as baseline for their specific institutions, as a result of participation in NRPs. Programs that were a minimum of 12 months in duration demonstrated improved retention rates after one year ranging from 88 to 100% as compared to baselines ranging from 50 to 86% (Anderson et al., 2009; Beyea, Slattery, & von Reyn, 2010; Maxwell, 2011; Olson-Sitki et al., 2012; Medas et al., 2015). Some programs saw decreases at six months that later increased

by the time of NRP completion at 12 months (Meyer Bratt et al., 2011). Several programs that showed improvement in retention rates at 12 months were later found to decrease when participants were surveyed further out including decreases seen at the 2-year mark (Anderson et al., 2009; Olson-Sitki et al., 2012), as well as the 3- and 5-year marks (Kramer et al., 2012; Cline et al., 2017). Potential rationale for this decrease was felt to be related to the absence of support programs and networks such as is offered during the first year of the NRP (Anderson et al., 2009; Olson-Sitki et al., 2012; Cline et al., 2017). Little detail is provided as to what level of continued support or education was made available to participants following completion of their NRP program.

Summary

Overall, NGN participation in NRPs is associated with mixed, but largely positive, benefit including increased comfort/confidence (Anderson et al., 2009; Goode et al., 2009; Beyea et al., 2010; Kowalski & Cross, 2010; Meyer Bratt et al., 2011; Olson-Stiki et al., 2012; Medas et al., 2015; Cline et al., 2017), higher job satisfaction (Fink et al., 2008; Anderson et al., 2009; Goode et al., 2009; Meyer Bratt & Felzer, 2011; Medas et al., 2015), and increased retention (Anderson et al., 2009; Beyea et al, 2010; Maxwell, 2011; Olson-Sitki et al., 2012; Medas et al., 2015). Elements such as comfort/confidence appear to contribute to increased retention and job satisfaction (Goode et al., 2009; Medas et al., 2015). Some data suggested that longer NRPs had higher reported levels of job satisfaction compared to programs of a shorter duration (Rush et al., 2015), which could be attributed to the opportunity for development of peer and mentor relationships over time to help withstand the psychosocial impact of a challenging healthcare environment. Most increases in job satisfaction were highest at completion of the one year NRP (Fink et al., 2008; Anderson et al., 2009; Goode et al., 2009; Meyer Bratt & Felzer, 2011) as

compared to other time points. At least two studies showed a decrease in job satisfaction at six months (Goode et al., 2009; Medas et al., 2015), corresponding to the time of increased stressors in the NGN practice (Ackerson & Stiles, 2018). Various satisfiers and dissatisfiers were identified that can help contribute support for these results. Nurse retention was highest upon completion of the 12 month NRP (Anderson et al., 2009; Beyea et al, 2010; Maxwell, 2011; Olson-Sitki et al., 2012; Medas et al., 2015) among those participants surveyed, with decreased retention seen at two years and beyond (Anderson et al, 2009; Olson-Sitki et al., 2012).

By further evaluating the impact of NRPs on NGNs, additional knowledge can be gained about the impact of such programs on retention and satisfaction.

Theoretical Model

In 1982, Patricia Benner PhD, RN, FAAN introduced her theory outlining the mechanism of how nurses transition in their role over time from novice to expert. This model was adapted from University of California at Berkley professors Stuart and Hubert *Dreyfus' Model of Skill Acquisition* and their research in how airline pilots and chess pilots attained professional expertise (Benner, 1982). Their model, published in 1980, proposed a multi-stage process that learners progressed through as they worked to acquire knowledge and skill. Benner recognized the applicability of the models' concepts within the field of nursing and adapted it as a more objective means of evaluating nursing knowledge and skill acquisition. This five-step process helps demonstrate how nurses develop their practice over time as a result of the combination of educational and professional clinical experiences.

Benner's *From Novice to Expert* framework begins with the first level of nursing experience: novice. In this stage, novice or beginner nurses have no experience in the scenario in which they are expected to perform (Benner, 1982). They receive instruction from others on

general rules to perform specific tasks. Their behavior is rule-governed and inflexible, and they do not have the discretionary judgment to give thought to why they are performing duties a specific way (Benner, 1982). They complete tasks by following the instructions of others. This stage is most commonly exhibited by a nursing student. In the second stage, advanced beginner, nurses have gained some minimal insight into practice through their previous experiences, yet they are still very much in the beginning phases of their career. They can begin to recognize patterns and rationale behind specific actions based on what they have learned previously, and they are capable of “demonstrating marginally acceptable performance” (Benner, 1982, p. 403) that guides their actions. This stage is represented by the new graduate nurse (NGN), who relies on nursing school experiences as they begin their practice as a professional nurse. The third stage, competence, is usually seen in a professional nurse with two to three years of experience in the clinical setting in the same area (Benner, 1982) or focusing on the same daily situations. Nurses at this stage can begin to view their actions in relation to long-term goals. They are able to identify patterns and develop mastery over their daily workflow that helps them to develop a sense of greater efficiency and organization (Benner, 1982). Proficiency is the fourth stage. Nurses at this stage have a great understanding of the clinical situation and can better anticipate and modify their actions in response to the changing environment (Benner, 1982). They identify situations as whole parts and tend to exhibit better decision-making, overall (Benner, 1982). The final stage is the expert stage, where nurses no longer rely on analytic rules or guidelines to determine their nursing action. They have a much deeper understanding and grasp of clinical situations and often rely on intuition (Benner, 1982). They are highly proficient clinicians with extensive knowledge and skill sets within the field of nursing.

Following graduation, NGNs typically enter the field of professional nursing as advanced beginners, with working understanding of nursing care of patients and are able to complete basic tasks independently. Depending on their previous experience, they may even fall into the novice category if they are working in clinical areas where they had no previous education or clinical experiences as a student nurse. The *From Novice to Expert* theory proposes that nurses acquire skills over time through both education and experiential work and serves as a framework for how nursing practice can be cultivated and developed (Benner, 1982). Participation in nurse residency programs (NRPs) can help facilitate this transition by providing didactic instruction and hands-on learning experiences in a manner that supports the needs of the advanced beginner NGN.

Methods

Design

For this descriptive, quantitative process improvement project, analysis was undertaken to identify experiences of those new graduate nurses (NGNs) participating in a nurse residency program (NRP). Specifically, this project gathered information about NGN reports of job-related comfort/confidence and satisfaction measures throughout their first year of employment and compared those findings to previous participants' results, where possible, and examined retention outcomes for the NRP over that time.

Translational Framework

The FADE model for quality improvement is a five-step model that was developed by the Organizational Dynamic Institute of Wakefield, Massachusetts (ODI, 2012). The first step of this model is *focus*, where processes to be improved are defined. At this point, data is collected in order to generate a list of problems experienced by the system under investigation. From there, a single problem is selected, defined, and verified to identify the process to be improved. This is followed by the second step of the model, *analyze*, where data related to the defined problem is

collected and analyzed. In this phase, the required knowledge necessary for comprehensive evaluation of the problem is identified followed by the collection of the data to establish patterns helping to identify the root cause of the problem under investigation. The third step, *develop*, is where action plans for improvement are developed. In this step, the implementation plan is developed and the potential solution for the problem under investigation is proposed. In the next stage, *execute*, the commitment of the necessary personnel to carry out the plan is secured and they work collectively to implement the action plan(s) on a pilot basis. This step is often followed by a fifth stage, *evaluate*, where the organization establishes an ongoing system to measure and monitor the impact of the improvement efforts, thus helping to ensure success. This cyclic process is continually repeated until the goal is reached. Applying the FADE model to NGN NRP: the *focus* was the process of NGNs entering the nursing profession including challenges they encounter and subsequent impact upon practice patterns related to retention; the manner in which they are onboarded, oriented, trained and supported during their first year(s) of practice and corresponding employment statistics was *analyzed*; a process, specifically a new graduate residency program, to address these challenges and overcome the barriers they experience was *developed*; and the program was *executed*. This project was concerned with *evaluating* the success of the NGN NRP.

Setting

The practice setting for this Doctor of Nursing Practice (DNP) project was an American Nurses Credentialing Center (ANCC) Magnet recognized hospital system located in the southeastern United States. The NGN NRP is a 12-month program comprised of a standard core curriculum with seven potential specialty tracks (behavioral health, critical care, emergency,

maternal-child, acute care/medical-surgical, progressive care, and operating room), as well as professional day-long workshops and mentorship opportunities.

Sample

The sample was a convenience sample of all registered nurses (RNs) participating in the facility's NGN NRP for the period of time of July 2020-August 31, 2021 (referred to as the Summer 2020-2021 cohort). On average, more than 80 NGNs are admitted to the facility's NRP at two to three points each year (i.e. February, July/August, and December) with the largest number of participants typically beginning in the July/August cohorts, based on graduation patterns. Inclusion criteria were NGNs without previous professional nursing experience hired into the NRP. All program participants who met inclusion criteria were included in the sample.

Intervention

The intervention being evaluated was the NGN NRP. The NRP staff enrolled the participants into the program and oversaw all aspects of the programming/curriculum including the coordination of workshops and facilitation of mentorship pairings. The NGN NRP staff coordinated the collection of survey data as well as the distribution of all project communications, including survey reminders.

Data Collection

Procedures

Participants in the Summer 2020-2021 cohort were surveyed by NRP staff using Survey Monkey (San Mateo, CA) at 1, 4, and 11 month intervals after enrollment in the program. Participant anonymity was assured through the de-identification of personal information from survey responses by the NRP staff prior to sharing the results with the investigator. Completion of the survey was optional for the participants, however, strongly encouraged by NRP staff. NRP

staff sent an Excel (Redmond, WA) spreadsheet containing the data to the investigator, who had no access to the participants' identifying information. Survey results were kept on a password protected laptop in the investigator's home. Anticipated barriers to data collection included reliance on participant's voluntary and accurate completion of the survey tool, time, and issues related to the coronavirus disease 2019 (COVID-19) pandemic, which may have adversely affected participation. Approvals from both the University of North Carolina at Greensboro and the project facility's Institutional Review Boards (IRBs) were obtained prior to beginning data collection. The NGN NRP staff provided the investigator with participant survey data and also retention data that were collected electronically using the organization's data dashboard platform. These data were aggregated for the group and contained no personal identifying information.

Budget, Time, Resources

No funding was required for this project as data was collected by the NGN NRP staff using hospital system funding and statistical analysis was performed by the investigator. Final 11-month data were collected by the NGN residency program staff in August 2021; data were shared with the investigator in October 2021. Access to the NRP staff was continuously maintained, with the primary institutional liaison being the facility's Magnet Program Coordinator for Nursing Excellence and Retention. Assistance with data analysis and statistical analysis was obtained through University of North Carolina at Greensboro School of Nursing's Biostatistician Faculty.

Instrument

The survey instrument used was the Casey-Fink Graduate Nurse Experience Survey (revised) tool (Appendix A), which was designed to measure self-reported perceptions of issues

NGNs experience from the time of entry through their first year of practice as a professional nurse (Fink et al., 2008). This 25-item tool is comprised of five sections: demographic information, skills/ procedure performance (consisting of 3 open-ended questions), comfort/confidence (consisting of 24 Likert-type items with potential responses of strongly disagree, disagree, agree, strongly agree), job satisfaction (consisting of 9 Likert-type items with potential responses of very dissatisfied, moderately dissatisfied, neither satisfied or dissatisfied, moderately satisfied, very satisfied), and 5 open-ended questions which gather information on the participant's opinion of work environment and transition from student role to graduate nurse.

Use of the instrument provided for the calculation of an overall composite comfort/confidence score as well as comfort/confidence scores for each of the five factors reflective of NGN practice: communication/leadership, organizing/prioritizing, professional satisfaction, support, and stress (Fink et al., 2008). These factors were identified from exploratory factor analysis of the instrument that examined areas that underlay the composite comfort/confidence score and reflected comfort/confidence with the performance of nursing responsibilities within the specified category (Casey, 2019). The communication/leadership factor represented communication with patients and interprofessional team members, as well as clinical leadership in providing nursing care. The organizing/prioritizing factor was related to organizing patient care and prioritization of that nursing care based on patient care needs. The third factor, professional satisfaction, represented feelings of support from family and friends (Casey, 2019). The stress factor reflected items related to personal stressors, and the final factor, support, was related to support provided by preceptors and role models (Casey, 2019).

The instrument allowed for measurement of job satisfaction among NGNs based upon responses related to their satisfaction with salary, vacation, work schedule, and benefits received.

It also collected data related to NGN job satisfaction with opportunities for career advancement, amount of responsibility assumed, and amount of encouragement and feedback provided. This project analyzed results for selected items from the comfort/confidence section and job satisfaction section (see Table 1). Permission to use the survey tool to assess NGN experience

Table 1

Casey-Fink Graduate Nurse Experience Survey (revised) Items Used for Analysis

<i>Comfort/Confidence Items</i>
1. I feel confident communicating with physicians.
2. I am comfortable knowing what to do for a dying patient.
3. I feel comfortable delegating tasks to the Nursing Assistant.
4. I feel at ease asking for help from other RNs on the unit.
5. I am having difficulty prioritizing patient care needs.
6. I feel my preceptor provides encouragement and feedback about my work.
7. I feel staff is available to me during new situations and procedures.
8. I feel overwhelmed by my patient care responsibilities and workload.
9. I feel supported by the nurses on my unit.
10. I have opportunities to practice skills and procedures more than once.
11. I feel comfortable communicating with patients and their families.
12. I am able to complete my patient care assignments on time.
13. I feel the expectations of me in this job are realistic.
14. I feel prepared to complete my job responsibilities.
15. I feel comfortable making suggestions for changes to the nursing plan of care.
16. I am having difficulty organizing patient care needs.
17. I feel I may harm a patient due to my lack of knowledge and experience.
18. There are positive role models for me to observe on my unit.
19. My preceptor is helping me develop confidence in my practice.
20. I am supported by my family/friends.
21. I am satisfied with my chosen nursing specialty.
22. I feel my work is exciting and challenging.
23. I feel my manager provides encouragement and feedback about my work.
<i>Job Satisfaction Items: How satisfied are you with the following aspects of your job?</i>
1. Amount of responsibility
2. Opportunities for Career Advancement
3. Amount of Encouragement and Feedback

was provided by the original authors and the instrument is freely available from the University of Colorado Health website (Appendix B). The survey instrument has a reliability of 0.89

(Cronbach's coefficient alpha) after repeated measures (Fink et al., 2008). This determination was made by the original authors based on analyzing the responses of sample participants measured on several different occasions with participants not being independent of one another (Fink et al., 2008). The collected data was tabulated into an Excel (Redmond, WA) spreadsheet by the Information Services Division (ISD) at the project facility. No identifiable participant data was contained in the dataset that was provided to the investigator. Data were stored in a password protected Box (Redwood City, CA) cloud storage accessible only to the investigator, faculty advisor, and statistician. Survey data were deleted following completion of the project.

Data Analysis

Statistical package for the social sciences (SPSS) software (IBM, Chicago, Illinois) was used to conduct data analysis with a level of statistical significance set at 0.05. Frequencies were used to summarize demographic data about the cohort and descriptive statistics were performed on the specified items to evaluate the reported levels of comfort/confidence and job satisfaction measures of the NGN participants at 1, 4, and 11 months in the NRP using completed Casey-Fink Graduate Nurse Experience Surveys (revised) [questions 1-23 of Section II (comfort/confidence) and questions 6-8 of Section III (job satisfaction)]. Questions 24 and 25 from Section II were omitted from analysis as they measure stress, which was not amenable to reliability measurement nor included in the calculation of composite nor factor comfort/confidence scores (Fink et al., 2008). Cronbach's alpha was calculated for the Casey-Fink composite score and each of the remaining factors (communication/leadership, organizing/prioritizing, professional satisfaction, and support) to determine if there were any issues related to reliability. Once no reliability issues were identified, composite comfort/confidence scores were calculated as were comfort/confidence scores for the individual

factors. One-way analysis of variance (ANOVA) testing was used to compare the mean comfort/confidence scores of the Summer 2020-2021 cohort participants at 1, 4, and 11 months. Independent t-testing was performed to examine if there was a difference between Summer 2020-2021 and Summer 2019-2020 cohort participants at 11 months. Retention rates were examined with 12 month completion defined as NGNs still employed by the facility, attending NRP activities, and/or participating in NRP graduation.

Results

Demographics

One hundred fifty-nine (159) new graduate nurses (NGNs) were enrolled in the Summer 2020-2021 cohort. This number decreased throughout the duration of the program due to participant withdrawal from the nurse residency program (NRP). Not all NRP participants completed surveys at all time points. This, along with the NRP attrition rate, lead to variability in sample size across the survey time points (see Table 2). Surveys were deemed invalid if they

Table 2

Casey-Fink Graduate Nurse Experience Survey (revised) Completion Data for Summer 2020-2021 Cohort

Time of Survey	NGN NRP participants		Returned surveys		Invalid surveys		Valid surveys	
	n	%	n	%	n	%	n	%
1 month	159	100	122	76.7	51	41.8	71	44.7
4 months	156	98.1	87	55.8	22	25.3	65	41.7
11 months	140	88.1	54	38.6	19	35.2	35	25.0

Note. NGN = new graduate nurse; NRP = nurse residency program

were not completed in their entirety or if respondents reported “N/A” (not applicable) to any of the questions related to the comfort/confidence or job satisfaction sections. Demographics also varied based on survey completions at the various time points (see Table 3). The mean age of

Table 3
Sociodemographic Characteristics of Summer 2020-2021 Cohort

Characteristic	1 month		4 months		11 months	
	n	%	n	%	n	%
Age (years)						
N Valid	68		64		33	
Missing	3		1		2	
M	28.34		28.03		28.88	
SD	9.051		7.434		9.443	
Minimum	20		22		22	
Maximum	55		55		51	
Ethnicity						
Asian	2	2.8	2	3.1	2	5.7
Black	11	15.5	6	9.2	4	11.4
Caucasian(white)	38	53.5	46	70.8	17	48.6
Hispanic	1	1.4	2	3.1	0	0
Did not wish to include	3	4.2	5	7.7	2	5.7
Other	3	4.2	2	3.1	1	2.9
Missing	13	18.3	2	3.1	9	25.7
Gender						
Female	61	85.9	60	92.3	31	88.6
Male	7	9.9	3	4.6	2	5.7
Prefer not to say	0	0	1	1.5	0	0
Missing	3	4.2	1	1.5	2	5.7
Educational Preparation						
ADN	29	40.8	32	49.2	19	54.3
BSN	28	39.4	29	44.6	7	20.0
Diploma	1	1.4	2	3.1	0	0
Missing	13	18.3	2	3.1	9	25.7

Table 3 (continued)*Sociodemographic Characteristics of Summer 2020-2021 Cohort*

Characteristic	1 month		4 months		11 months	
	n	%	n	%	n	%
Previous healthcare experience						
EMT	0	0	0	0	0	0
Medical Assistant	1	1.4	2	3.1	0	0
Nursing Assistant	25	35.2	29	44.6	13	37.1
Other*	14	19.7	17	26.2	8	22.9
Student Externship	8	11.3	3	4.6	1	2.9
Volunteer	3	4.2	5	7.7	1	2.9
Missing	20	28.2	19	13.8	12	34.2

*Other responses included (did not total to 100% as data reported as free text entry allowing multiple responses):

- 1 month: LPN (6), CNA/volunteer/LPN (2) elderly caretaker (1), medication aide (1), pharmacy (1), ED registration/office manager (1), volunteer/nursing assistant/student externship (1)

- 4 months: LPN (4), CNA/student extern (1), cytotechnologist (1), EMT/LPN (1), medication technician (1), nursing home (1), Peace Corps Community Health Educator (1), pharmacy technician (1), rehab technician (1), unit secretary/CNA (1), volunteer/CAN/student externship (1)

- 11 months: CNA/LPN (2), LPN (1), student extern (1), CNA (1), surgical tech (1)

Note. ADN = Associate Degree in Nursing; BSN = Bachelor of Science in Nursing; CNA = certified nursing assistant; ED = emergency department; EMT = emergency medical technician; LPN = licensed practical nurse

survey respondents across time points was 28.32 years with ranges between 20-55 years, depending on the month surveys were obtained. Overall, the majority of NGNs completing survey data across each time point were Caucasian females with an Associate Degree in Nursing. Those who reported previous experience in health care most commonly reported work as a nursing assistant with other work experiences including as licensed practical nurse (LPN),

medication aide, pharmacy technician, Peace Corps Community Health educator, unit secretary, and cytotechnologist.

Reliability

Reliability (Cronbach's alpha) was calculated for the project sample. Results were found to be greater than 0.70 for all scales (see Table 4) determining that the scores for the items were reliable.

Table 4

Comfort/Confidence Item Reliability (Cronbach's alpha) for Summer 2020-2021 cohort

Score	Reliability (Cronbach's alpha)
Overall Comfort/Confidence Composite	0.883
Communication/Leadership factor	0.754
Organizing/Prioritizing factor	0.730
Professional Satisfaction factor	0.741
Support factor	0.871

Comfort/Confidence

As outlined in Table 5, survey respondents reported the highest composite comfort/

Table 5

Casey-Fink Graduate Nurse Experience Survey (revised) Comfort/Confidence Scores for Summer 2020-2021 Cohort

Measure	1 month \bar{x} (SD)	4 months \bar{x} (SD)	11 months \bar{x} (SD)
<i>Composite</i>	73.96 (6.3818)	72.69 (7.1849)	74.06 (8.5438)
<i>Communication/Leadership factor</i>	2.89 (0.4214)	3.04 (0.3321)	3.17 (0.3981)
“I feel confident communicating with physicians”	2.70 (0.6844)	3.09 (0.4913)	3.34 (0.5392)
“I am comfortable knowing what to do for a dying patient.”	2.66 (0.6958)	2.80 (0.6423)	2.97 (0.6177)
“I feel comfortable delegating tasks to the Nursing Assistant”	2.93 (0.5934)	3.06 (0.4286)	3.26 (0.5054)
“I feel comfortable communicating with patients and their families”	3.25 (0.5534)	3.35 (0.5429)	3.26 (0.6108)
“I feel prepared to complete my job responsibilities.”	2.96 (0.5716)	3.02 (0.4143)	3.14 (0.5500)
“I feel comfortable making suggestions for changes to the nursing plan of care.”	2.82 (0.6826)	2.92 (0.5095)	3.03 (0.5681)
<i>Organizing/Prioritizing factor</i>	2.88 (0.4021)	2.84 (0.4347)	3.03 (0.4647)
“I am having difficulty prioritizing patient care needs.”	2.85 (0.5769)	2.88 (0.5730)	3.06 (0.5913)
“I feel overwhelmed by my patient care responsibilities and workload.”	2.65 (0.6347)	2.55 (0.7078)	2.63 (0.7702)
“I am able to complete my patient care assignment on time.”	3.07 (0.5161)	3.06 (0.5556)	3.26 (0.5054)
“I am having difficulty organizing patient care needs.”	2.85 (0.5769)	2.79 (0.6493)	3.09 (0.5621)
“I feel I may harm a patient due to my lack of knowledge and experience.”	2.99 (0.6435)	2.92 (0.7564)	3.09 (0.6585)
<i>Professional Satisfaction factor</i>	3.56 (0.4239)	3.36 (0.4941)	3.33 (0.5113)
“I am supported by my family/friends.”	3.72 (0.4530)	3.52 (0.5034)	3.54 (0.5054)
“I am satisfied with my chosen nursing specialty.”	3.47 (0.6055)	3.26 (0.7558)	3.20 (0.7195)
“I feel my work is exciting and challenging.”	3.50 (0.5035)	3.29 (0.6053)	3.26 (0.5606)
<i>Support factor</i>	3.51 (0.3558)	3.35 (0.3812)	3.32 (0.4320)
“I feel at ease asking for help from other RNs on the unit.”	3.55 (0.5011)	3.51 (0.5896)	3.54 (0.5054)
“I feel my preceptor provides encouragement and feedback about my work.”	3.62 (0.5173)	3.52 (0.5034)	3.31 (0.7582)
“I feel staff is available to me during new situations and procedures.”	3.58 (0.5254)	3.51 (0.5339)	3.49 (0.6122)
“I feel supported by the nurses on my unit.”	3.59 (0.4951)	3.34 (0.5936)	3.49 (0.5621)
“I have opportunities to practice skills and procedures more than once.”	3.35 (0.5372)	3.19 (0.5272)	3.26 (0.6108)

Table 5 (continued)

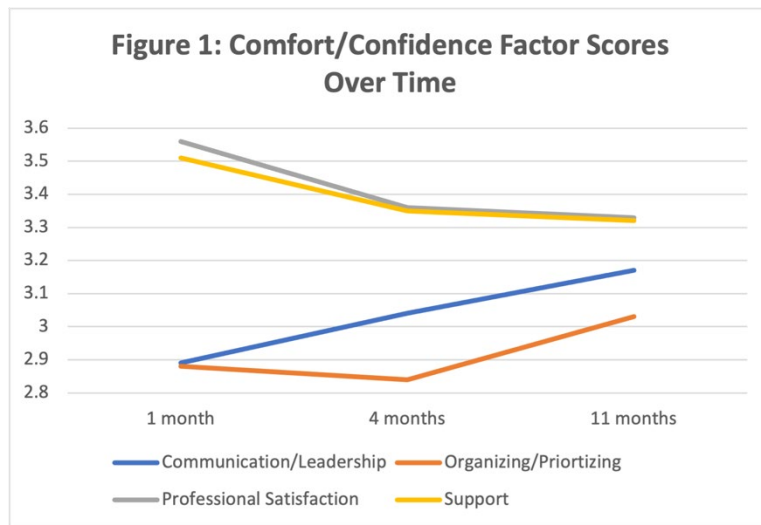
Casey-Fink Graduate Nurse Experience Survey (revised) Comfort/Confidence Scores for Summer 2020-2021 Cohort

<i>Support factor (continued)</i>	1 month \bar{x} (SD)	4 months \bar{x} (SD)	11 months \bar{x} (SD)
“I feel the expectations of me in this job are realistic.”	3.23 (0.5126)	2.97 (0.5582)	2.94 (0.6391)
“There are positive role models for me to observe on my unit.”	3.63 (0.5138)	3.48 (0.5034)	3.57 (0.5021)
“My preceptor is helping me to develop confidence in my practice.”	3.56 (0.5273)	3.45 (0.5010)	3.34 (0.6391)
“I feel my manager provides encouragement and feedback about my work.”	3.44 (0.5273)	3.22 (0.6493)	3.00 (0.8402)

Note. Composite comfort/confidence score represents summation of questions 1-23 in sections II of Casey-Fink Graduate Nurse Experience Survey (revised). Each score in gray represents average of specific questions listed underneath reflective of Factor as outlined by the instrument.

confidence score at the 11 month mark after decreasing at 4 months from initial 1 month survey.

In looking at specific factor scores (see Figure 1), respondents reported the highest levels of

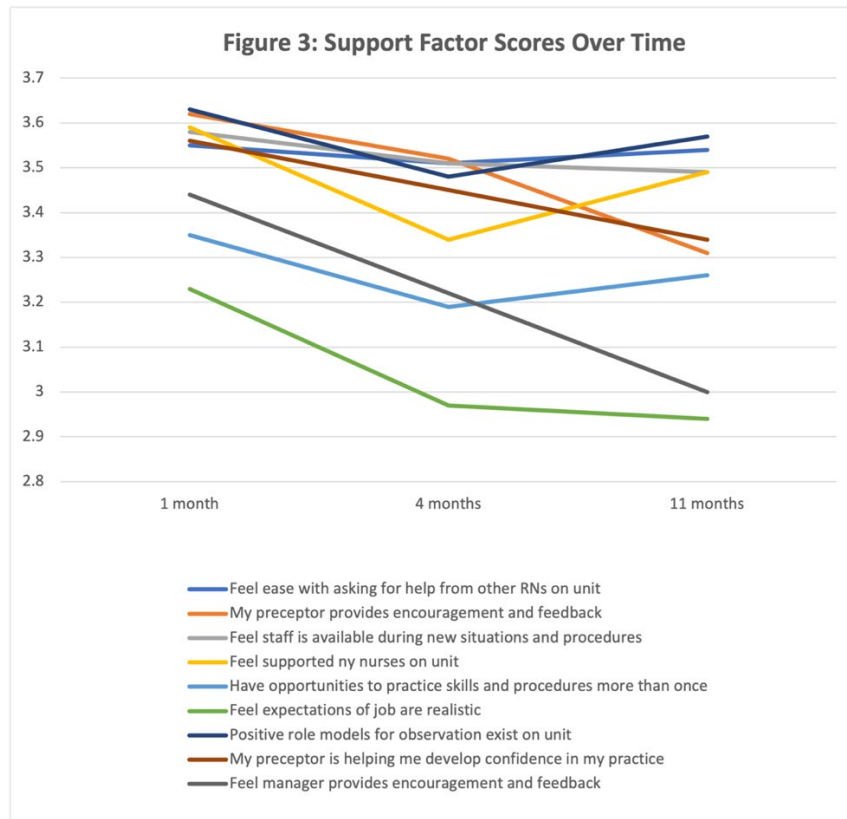


comfort/confidence in the professional satisfaction factor across all time frames, followed by factors of support, communication/leadership, and organizing/prioritizing. Respondents reported progressive declines in levels of overall comfort/confidence within the factors of professional satisfaction and support with the lowest levels reported at 11 months. Notable decreases over

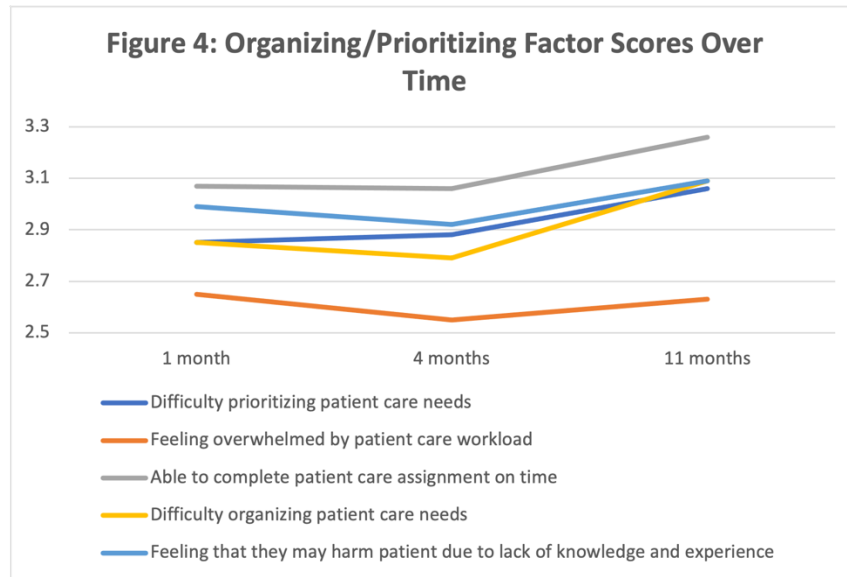
time were seen in the participants' responses to the individual items of *I am satisfied with my chosen specialty* and *I feel my work is exciting and challenging* (see Figure 2).



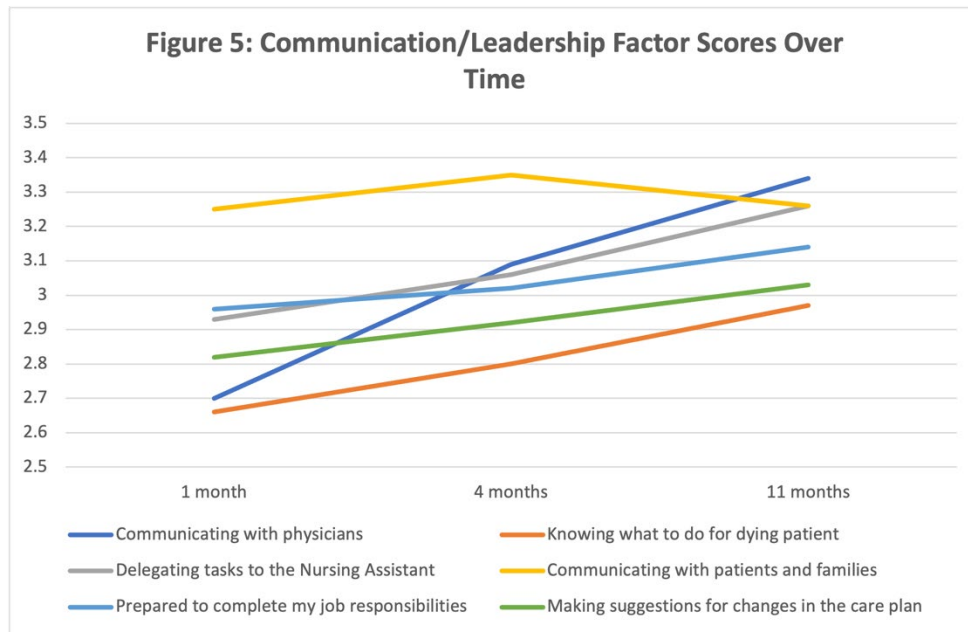
Similarly, comfort/confidence levels in the support factor were lowest at NRP completion (see Figure 3). For the individual support factor items *I feel my manager provides encouragement*



and feedback about my work, my preceptor provides encouragement and feedback, my preceptor is helping me to develop confidence in my practice, and I feel the expectations of me in this job are realistic, scores were highest at 1 month and trended steadily downward at 4 months and 11 months. Overall measures related to comfort/confidence in the organizing/prioritizing factor (see Figure 4) decreased from 1 month to 4 months, but later rose with highest levels reported at



11 months. Scores for the organizing/prioritizing factor item *I feel overwhelmed by my patient care responsibilities and workload* were highest at 1 month, decreased at 4 months, and approached return to baseline at 11 months. Comfort/confidence in the communication/leadership factor (see Figure 5) steadily increased over time. An exception was



participant's reported levels of comfort/confidence for the item *I feel comfortable communicating with patients and their families* which peaked at the 4 month mark and decreased by NRP completion at 11 months.

One-way ANOVA testing was performed to compare the mean composite comfort/confidence scores of the Summer 2020-2021 cohort 1, 4, and 11 month results (see Appendix C1), which showed no statistically significant difference in results between these time points [$F(2,168)=.663, p=.517$]. One way ANOVA testing was also performed to compare the mean factor scores across each group to determine whether differences existed at different points of time (Appendix C2). Statistically significant differences were found between the groups in the factors of communication/leadership [$F(2,168)=6.691, p=.002$] and professional satisfaction [$F(2,168)=4.315, p=.015$]. Tukey post hoc testing showed statistically significant different increases in mean communication/leadership scores between months 1 and 11 ($p=0.002$), and statistically significant decreases in professional satisfaction factor scores from months 1 to 4 ($p=.032$) and from months 1 to 11 ($p=.049$).

As part of the project design, analysis to compare the Summer 2020-2021 cohort data against Summer 2019-2020 cohort data was conducted. Due to the coronavirus disease 2019 (COVID-19) pandemic and resulting institutional changes, data collection by the NRP staff from the 2019-2020 cohort was extremely limited with only 9 valid surveys collected at the 11 month mark available for analysis. Using the available data, independent t-test analysis for comfort/confidence composite score was performed for the 11 month time point from the 2019-2020 Summer cohort and 2020-2021 Summer cohort (see Appendix C3). Testing revealed no significant difference between the two groups ($t_{42}=1.577$, $p=.061$) regarding their comfort/confidence composite scores. No survey data was available for months 1 or 4 from the Summer 2019-2020 cohort to allow for other comparisons.

Job Satisfaction

Summer 2020-2021 cohort respondents were surveyed regarding their satisfaction levels with aspects of their job (see Table 6). Job satisfaction related to the amount of encouragement

Table 6
Selected Job Satisfaction Items Reported by Summer 2020-2021 Cohort

Question:	1 month \bar{x} (SD)	4 months \bar{x} (SD)	11 months \bar{x} (SD)
Amount of responsibility	4.06 (0.7149)	3.75 (0.7712)	3.77 (0.9727)
Career advancement opportunities	4.25 (0.7115)	3.91 (0.7229)	4.00 (0.8402)
Amount of encouragement and feedback	4.37 (0.6812)	4.23 (0.7659)	4.09 (0.8530)

received decreased over time, with the lowest levels seen at the conclusion of the NRP. Satisfaction levels related to career advancement and amount of responsibility were highest at entry, dropped at 4 months, but rebounded by NRP completion at 11 months. One-way analysis of variance (ANOVA) testing was performed to compare the mean selected job satisfaction scores at the 1, 4, and 11 month time points for the Summer 2020-2021 cohort (see Appendix C4). The only statistically significant difference was found in satisfaction with opportunities for career advancement [$F(2,168)=3.866, p=.023$] with Tukey post hoc testing showing statistically significant decrease in satisfaction between months 1 and 4 ($p=0.020$).

Independent sample t-testing was performed to look for differences in mean selected job satisfaction measures between the Summer 2019-2020 and Summer 2020-21 cohorts at 11 months, based on available data (see Appendix C5). Analysis showed the only significant difference to be found between the two cohorts at 11 months to be in the amount of encouragement and feedback provided ($t_{10.167}=2.028, p=.035$), with the Summer 2020-21 cohort demonstrating higher satisfaction. No survey data was available for months 1 or 4 from the Summer 2019-2020 cohort to allow for other comparisons.

Retention

For the Summer 2020-2021 cohort, a total number of 159 NGNs were enrolled at the beginning of the NRP with 110 still employed by the facility and participating in residency activities at 11 months, reflecting a retention rate of 88.1%. This rate was lower than that reported for the Summer 2019-2020 cohort of 92.4% representing 122/132 NGNs employed at 11 months and lower than the NRP's goal of 90%.

Discussion

The purpose of this Doctor of Nursing Practice (DNP) project was to evaluate the impact of a new graduate nurse (NGN) nurse residency program (NRP) at a healthcare system in the southeastern United States. Specific focus was aimed at examining retention and satisfaction among Summer 2020-2021 NRP participants by analyzing information about their reported levels of job-related comfort/confidence and satisfaction during their first year of practice.

Overall Comfort/Confidence

Respondents reported the highest overall levels of comfort/confidence at the time of NRP completion. This aligns with what is seen in the literature; NGNs typically have higher stress and frustration in the first months after entry into practice, with improvements in their comfort/confidence levels around their first year as their knowledge and skills continue to grow (Casey et al., 2004; Goode 2009; Kowalski & Cross, 2010; Cochran, 2017). This result is expected based on Benner's *From Novice to Expert* Theory, which proposes greater confidence as a nurse proceeds from novice to advanced beginner (1984).

Professional Satisfaction Factor

Respondents reported their highest levels of comfort/confidence among the four factors in that of professional satisfaction. However, despite its high ranking, a decline over the duration of the NRP was noted similar to that seen in the literature (Goode et al., 2013; Cline et al., 2017). Something that may have contributed to this finding was the reported lack of understanding by family and friends regarding what is encountered in the clinical setting, particularly with the increased acuity and treatment challenges experienced during the unprecedented times of the COVID-19 pandemic (Naylor et al, 2021). Emotional support for NGNs helps reduce their anxiety and stress, and can increase their confidence (Ebrahimi, Hassankhani, Negarandeh,

Gillespie, & Azizi, 2016). This further reinforces the need for emotional support from peers and interprofessional colleagues such as that found in NRPs.

Support Factor

NGNs reported comfort/confidence levels within the support factor as second highest overall among respondents participating in the NRP. Some of the most valuable reported benefits of participation by NGNs in a NRP includes the support of fellow NGN peers, preceptors, and mentors (Fink et al., 2008; Goode et al., 2009; Kowlaski & Cross, 2010; Olson-Sitki et al., 2012; Anderson et al., 2009). This is positive as such support helps to build a sense of teamwork and foster further growth of confidence with practice (Beecroft, Dorey & Wenten, 2008; Ebrahimi et al., 2016). However, similar to the professional satisfaction factor, respondents reported decreasing levels of support over the course of the NRP, which aligns with what is seen in the literature (Medas et al., 2015; Cline et al., 2017). Specifically, declines were seen related to feelings of adequate encouragement and feedback from their preceptor and manager, and decreasing agreement with the idea that the expectations of them in their jobs were realistic.

While data supports similar findings across NGN practice related to preceptor and manager support (Casey et al., 2004; Fink et al., 2008; Medas et al., 2015), it represents a concern that despite the advent of NRPs for many years, this remains a problem. It is difficult to know whether some – if any – of this can be attributed to expected changes in the relationship between the NGN and preceptor, where the preceptor provides less feedback as the NGN advances further in their practice (Cantrell et al., 2022). Patient acuity, stressors, and staffing patterns during the pandemic may also have had an impact by reducing the amount of time a preceptor had to provide direct feedback to the NGN respondent during the NRP (Hall, 2021). It is concerning that respondents report decreasing rates of their preceptors helping them to develop

confidence over the duration of the NRP. One would expect this to be the opposite, however, this may also be possible due to the fact that the NGN may not be directly working with the preceptor at 11 months in the same manner in which they were at 1 month. This may also be a result of different respondents completing the survey at different time points. Similarly concerning are respondents' reports that they received a lack of encouragement and feedback from their managers as literature shows that feedback from their nurse manager is reported by NGNs to improve their transition to practice (Kramer, Maquire, Schmalenberg, Brewer, Burke, Chmielewski, & Waldo, 2007; Fink et al., 2008).

NGN declining agreement concerning whether their expectations of the job were realistic aligns with what is seen in the literature as NGN experience "transition shock" after moving from the student role to that of professional RN (Wakefield, 2018). NRPs are designed to promote transition into practice and minimize transition shock among participants (Medas et al., 2015; Ackerson & Styles, 2018; Wildermuth et al., 2019). It may be that participants in this NRP experienced less transition shock as compared to those participating in other NRPs or when compared to NGNs who did not participate in a NRP. Regardless, NGN participants did experience decreasing agreement with the idea that the expectations of them in their jobs were realistic, which is an area for further attention by NRP staff.

Communication/Leadership Factor

Ranking third among the Summer 2020-21 cohort participants was the factor of communication/leadership. Challenges in communication/leadership skills that impact comfort/confidence are often reported by NGNs as they work to gain experience as a professional nurse with scores lowest upon entry to practice (Casey et al., 2004; Kowalski & Cross, 2010; Olson-Sitki et al., 2012; Cochran, 2017). With regards to the

communication/leadership factor, respondents reported increasing levels of comfort/confidence across the duration of the NRP, with the exception of communicating with patients and families. This largely aligns with the literature, where NGNs see increases in comfort/confidence in these items during NRP progression (Casey et al., 2004; Fink et al., 2008; Goode et al., 2009; Kowlski & Cross, 2010; Olson-Sitki et al., 2012; Cline et al., 2017). It is interesting to note that the Summer 2020-21 cohort NRP participants demonstrated a decline in comfort/confidence when communicating with patients/families. One may think that as a NGN gains more skill and experience as a professional nurse, that their comfort levels in talking with patients and families would similarly increase. Some of this decrease could be attributed to the unique stresses of providing nursing care in the middle of a pandemic, where acuity was high (Naylor et al., 2021). Nurses caring for COVID-19 positive patients during the time of the 2020-2021 Summer cohort, in general, found patients who required hospitalization to be quite ill with visitor restrictions placed upon families to avoid spread of the virus (Kim et al., 2021; Silvera et al., 2021; Pariseault et al., 2022). Nurses practicing in similar acute care settings often had to hold difficult conversations with family members over the phone or faced physical barriers related to personal protective equipment and isolation, which may have contributed to a decrease in comfort in their communication abilities/effectiveness with patients and families (Pariseault et al., 2022). Overall, the high rating of respondent's comfort/confidence levels with communication is encouraging as this is an area frequently cited as being an area of deficiency among NGNs (Baldwin, Baldwin, Bentley, Langtree, & Mills, 2014; Phillips et al., 2015).

Organizing/Prioritizing Factor

Lastly, respondents participating in the Summer 2020-21 cohort reported levels of comfort/confidence in organizing/prioritizing to be their lowest among the four factors over the course of the NRP program. NGNs often report challenges in organization/prioritization as they transition from student to professional nurse (Casey et al., 2004; Kowalski & Cross, 2010; Olson-Sitki et al., 2012; Cochran, 2017). This cohort demonstrated an increase following the drop at 4-months, indicating increased comfort/confidence in this area by the time of NRP completion similar to what is seen in the literature (Goode et al., 2009; Kowalksi & Cross, 2010; Olson-Sitki et al., 2012; Cline et al., 2017). Despite the overall findings, respondents reported continued feelings of being increasingly overwhelmed by their patient care workload at the time of NRP completion. This may be attributable to increased anxiety resulting from higher patient acuity and staffing patterns as seen during the time this cohort was practicing with the (coronavirus disease 2019) COVID-19 pandemic (Naylor et al., 2021). It may also have resulted from the fact that most registered nurses (RNs) as they complete orientation take on a greater number of patient assignments as compared to their first few months of practice (Cantrell, McKenzie, & Hessler, 2022).

Job Satisfaction

The literature supports that NGNs participating in NRPs have overall high job satisfaction with similar results found among this cohort (Fink et al., 2008; Anderson et al., 2009; Goode et al., 2009; Meyer Bratt & Felzer, 2011). Findings from the 2020-21 cohort regarding job satisfaction showing a decrease over time in the amount of encouragement and feedback received were different than that reported in the literature, which typically showed increases upon completion of the first year of the NRP, even in situations where decreases were

seen midpoint (Goode et al., 2009; Medas et al., 2015). Other findings regarding satisfaction levels related to career advancement and amount of responsibility were however consistent with that found in the literature (Goode et al., 2009; Medas et al., 2015; Ackerson & Stiles, 2018). While mean scores were high overall, this decrease in satisfaction with the amount of encouragement and feedback is likely related to similar issues impacting the NRP participants' comfort/confidence with support factor such as changes in relationships between NGNs and their preceptors and/or impact of the pandemic on preceptor feedback. Similarly, lack of encouragement and feedback from their managers may have played a role. Both remain areas for further attention by NRP staff.

Retention

Lastly, in examining the retention rate of the Summer 2020-2021 cohort as compared to other years, their rate was both lower than the goal set by the facility but also lower than that of the previous year's cohort. The most overwhelming factor that likely contributed to this was the impact of the COVID-19 pandemic, with increased moral injury resulting from increases in patient volume/acuity, staffing challenges, vaccine mandates, as well as social discourse arising in the general public about the virus itself (Chan et al., 2021). Emerging data has shown the mental health of health care providers, including nurses, worsened dramatically across the US as a result of the pandemic (Pearman, Hughes, Smith, & Neupert, 2020) with surveys showing numbers as high as 40% of nurses expressing the intention to quit within the next 2 years due to associated stressors (Sinsky, Brown, Stillman, & Linzer., 2021). The full impact of the pandemic will not be known for years. It will be interesting to see how this cohort's results compare as national data emerges looking at retention of NGNs during the COVID-19 pandemic. While

lower than previous cohort and NRP goals, it may turn out to be that this cohort demonstrated higher retention as compared to that seen in national trends for other NRPs.

Limitations

One limitation of this project was the variability in survey respondents. Nurse residency program (NRP) participants were not required to complete the surveys. Therefore, the survey responses were not representative of the same respondents over time. Although it may likely impose logistical challenges, having data from the same respondents across the duration of the NRP would allow for more meaningful analysis of change over time. Similarly, response rates were low, likely due to the surveys not being mandatory for completion and the high acuity within the patient care environment due to the coronavirus disease 2019 (COVID-19) pandemic. This could be addressed by making survey completion part of required NRP programming away from the patient care area and allowing dedicated time for survey completion. It is possible that the length of the survey or general survey fatigue may have also contributed to the lower completion rate.

In addition to those mentioned above related to survey completion, pandemic related causes may have influenced the data. This cohort was the first to have entered professional practice during a global pandemic before much was known about the natural history of the novel disease, when there was an initial lack of effective treatments and vaccines and limited clinical resources, including personal protective equipment. This could have negatively impacted the new graduate nurses' (NGNs') comfort/confidence levels as well as their job satisfaction. Patient acuity, inpatient census, and staffing patterns had a direct impact on staffing/preceptor availability and attention, which could have contributed to decreased support and feedback provided to the NRP participant by preceptors and managers. No questions were included

specific to COVID-19 to gather information about its impact on the NGNs' comfort/confidence and satisfaction. NRP programming had to be altered to accommodate social distancing and patient care demands, which impacted how the NRP was offered and may have affected its intended results.

This project design was conceptualized and implemented in the midst of a pandemic. Available literature and statistics regarding the existing nursing shortage do not consider the effect of a global pandemic whose full impact is continuing to evolve and will likely not be known for quite some time. Nurses are leaving the profession earlier, with some opting to move into non-patient care roles (e.g., administration or education) while others are opting to leave the profession entirely or choosing higher-paying travel opportunities that may worsen staffing shortages (Chan et al., 2021; Loy et al., 2022). Other limitations include lack of investigator contact with participants and non-staff affiliation with the facility (other than a student role), which necessitated reliance of NRP staff to conduct advertisements for survey, collect and share information with investigator while working against increasingly high (and frequently changing) acuity demands of the hospital setting. The NRP coordinator left the facility immediately prior to the time the project was to begin with new staff members requiring time to be hired and onboarded. Another challenge was the limited availability of data from the previous year's cohort for comparison due to poor response rates. Lastly, this study's conclusions may be limited as this was a single institution in one specific geographical area whose results may be different from other parts of the country.

Recommendations for Future Study

Despite the facility having implemented the nurse residency program (NRP) for (new graduate nurses) NGNs in 2016, they have only used the Casey-Fink Graduate Nurse Experience

Survey (revised) for evaluation since Fall 2019. This provides the future opportunity for continued evaluation of more longitudinal trends to help identify areas for NRP refinement. By addressing some of the limitations identified above related to how the NGNs are surveyed, such as making mandatory survey completion at all time periods a required element of NRP participation, greater insight into job-related comfort and confidence levels, as well as job satisfaction scores, could be made. Directly comparing individual NGNs' survey results to their retention rates looking for correlation could also be valuable in determining whether those with higher comfort/confidence and satisfaction scores demonstrate higher retention levels. Collecting data related to the impact of coronavirus disease 2019 (COVID-19) on the NGNs could help provide richer information and identification of interventions to address the barriers it placed on participants. With regards to COVID-19, future analysis of retention trends among NGNs will be important to undertake as the full impact of the pandemic is revealed.

This investigator was the second doctoral student assisting the NRP with program analysis. Having additional students involved in the analysis of future cohorts would similarly add to longitudinal data that may provide beneficial results for the NRP. This project was the first to include the analysis of job satisfaction measures and could be continued into the future to help identify additional opportunities for program refinement. Similarly, consideration should be made at providing more analysis of this NRP's participants beyond the 12-month mark to determine how measures of job satisfaction and retention fare over time.

Relevance and Recommendations for Clinical Practice

Overall, the results of this project provide helpful data for the project facility as their nurse residency program (NRP) continues to grow and evolve as well as other facilities considering the use of NRP programs. Improvements in comfort/confidence levels were noted

among the respondents over the duration of the program, with successes and opportunities noted within the various factors that can allow for refinement where needed. To assist with organizing/prioritizing patient care, the NRP staff could consider obtaining more information about the specific limitations that the new graduate nurse (NGN) participants face that restrict their feelings of confidence and take steps to address them as possible. Based on this input, they could design additional training and education for the participants in areas that address these such as time management. In order to further help minimize the transition shock that can occur from moving from student to professional nurse, NRP staff may develop new or bolster existing education and programming to better assist NGNs with managing job expectations as they progress through the NRP. To assist NGNs in obtaining more encouragement and feedback about their performance, NRP staff could work with the preceptors and managers to examine current practice and identify ways to increase what they provide to the NGN. If there are barriers to providing encouragement and feedback, solutions should be identified to address them so that this can be improved that would not only improve comfort/confidence, but improve job satisfaction, as well. More information should be collected about what is contributing to NGNs feeling overwhelmed by the workload and address the problem where possible. Hopefully as the burden of the COVID-19 pandemic on the healthcare system and nurses improves, some of the issues contributing to these findings will lessen. This analysis was the first to look at job satisfaction indices as measured by the Casey-Fink instrument for this specific NRP, and represents an area for future study to see how job satisfaction changes over the duration of the NRP program.

Conclusion

The nursing profession in 2022 finds itself in a unique position: facing both challenges in the workforce related to student, staff, faculty, and resource shortages coupled with increasing demands by consumers in an aging, chronically ill population, all in the midst of a global pandemic. Efforts to address nursing retention and satisfaction are needed as part of an overarching strategy on a national, state, and local level in order to promote the quality and safety of patient care, reduce costs, and improve nurse well-being. Nurse residency programs can be an effective means to help address these challenges for new graduate nurses with continued study recommended for improved success.

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Appendix A: Casey-Fink Graduate Nurse Experience Survey (revised)

Casey-Fink Graduate Nurse Experience Survey (revised)

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I. List the top three skills/procedures you are *uncomfortable performing* independently at this time? (please select from the drop down list) **list is at the end of this document.**

1. _____
2. _____
3. _____
4. _____ I am independent in all skills

II. Please answer each of the following questions by placing a mark inside the circles:

	STRONGLY STRONGLY DISAGREE AGREE	DISAGREE	AGREE	
1. I feel confident communicating with physicians.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am comfortable knowing what to do for a dying patient.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel comfortable delegating tasks to the Nursing Assistant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I feel at ease asking for help from other RNs on the unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I am having difficulty prioritizing patient care needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I feel my preceptor provides encouragement and feedback about my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 7. I feel staff is available to me during new situations and procedures. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 8. I feel overwhelmed by my patient care responsibilities and workload. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 9. I feel supported by the nurses on my unit. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 10. I have opportunities to practice skills and procedures more than once. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 11. I feel comfortable communicating with patients and their families. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

STRONGLY STRONGLY DISAGREE AGREE	DISAGREE	AGREE
---	-----------------	--------------

-
- | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 12. I am able to complete my patient care assignment on time. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 13. I feel the expectations of me in this job are realistic. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 14. I feel prepared to complete my job responsibilities. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. I feel comfortable making suggestions for changes to the nursing plan of care. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. I am having difficulty organizing patient care needs. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. I feel I may harm a patient due to my lack of knowledge and experience. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. There are positive role models for me to observe on my unit. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

19. My preceptor is helping me to develop confidence in my practice.
20. I am supported by my family/friends.
21. I am satisfied with my chosen nursing specialty.
22. I feel my work is exciting and challenging.
23. I feel my manager provides encouragement and feedback about my work.
24. I am experiencing stress in my personal life.
25. If you chose agree or strongly agree, to #24, please indicate what is causing your stress.
(You may circle more than once choice.)
- a. Finances
 - b. Child care
 - c. Student loans
 - d. Living situation
 - e. Personal relationships
 - f. Job performance
 - g. Other _____

III. How *satisfied* are you with the following aspects of your job:

	VERY VERY DISSATISFIED SATISFIED	MODERATELY DISSATISFIED	NEITHER SATISFIED NOR DISSATISFIED	MODERATELY SATISFIED	
Salary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vacation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Benefits package	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hours that you work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weekends off per month	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your amount of responsibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Opportunities for career advancement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount of encouragement and feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Opportunity for choosing shifts worked	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

IV. Transition (please circle any or all that apply)

1. What difficulties, if any, are you currently experiencing with the transition from the "student" role to the "RN" role?

- a. role expectations (e.g. autonomy, more responsibility, being a preceptor or in charge)
- b. lack of confidence (e.g. MD/PT communication skills, delegation, knowledge deficit, critical thinking)
- c. workload (e.g. organizing, prioritizing, feeling overwhelmed, ratios, patient acuity)
- d. fears (e.g. patient safety)
- e. orientation issues (e.g. unit familiarization, learning technology, relationship with multiple preceptors, information overload)

2. What could be done to help you feel more supported or integrated into the unit?

- a. improved orientation (e.g. preceptor support and consistency, orientation extension, unit specific skills practice)
- b. increased support (e.g. manager, RN, and educator feedback and support, mentorship)
- c. unit socialization (e.g. being introduced to staff and MDs, opportunities for staff socialization)
- d. improved work environment (e.g. gradual ratio changes, more assistance from unlicensed personnel, involvement in schedule and committee work)

3. What aspects of your work environment are most satisfying?

- a. peer support (e.g. belonging, team approach, helpful and friendly staff)
- b. patients and families (e.g. making a difference, positive feedback, patient satisfaction, patient interaction)
- c. ongoing learning (e.g. preceptors, unit role models, mentorship)
- d. professional nursing role (e.g. challenge, benefits, fast pace, critical thinking, empowerment)

- e. positive work environment (e.g. good ratios, available resources, great facility, up-to-date technology)

4. What aspects of your work environment are least satisfying?

- a. nursing work environment (e.g. unrealistic ratios, tough schedule, futility of care)
- b. system (e.g. outdated facilities and equipment, small workspace, charting, paperwork)
- c. interpersonal relationships (e.g. gossip, lack of recognition, lack of teamwork, politics)
- d. orientation (inconsistent preceptors, lack of feedback)

5. Please share any comments or concerns you have about your residency program:

V. *Demographics:* Circle the response that represents the most accurate description of your individual professional profile.

1. Age: _____ years

2. Gender:

- a. Female
- b. Male

3. Ethnicity:

- a. Caucasian (white)
- b. Black
- c. Hispanic
- d. Asian
- e. Other
- f. I do not wish to include this information

4. Area of specialty:

- a. Adult Medical/Surgical
- b. Adult Critical Care
- c. OB/Post Partum

- d. NICU
- e. Pediatrics
- f. Emergency Department
- g. Oncology
- h. Transplant
- i. Rehabilitation
- j. OR/PACU
- k. Psychiatry
- l. Ambulatory Clinic
- m. Other: _____

5. School of Nursing Attended (name, city, state located): _____

6. Date of Graduation: _____

7. Degree Received: AD: _____ Diploma: _____ BSN: _____ ND:

8. Other Non-Nursing Degree (if applicable):

9. Date of Hire (as a Graduate Nurse): _____

- 10. What previous health care work experience have you had:**
- a. Volunteer
 - b. Nursing Assistant
 - c. Medical Assistant
 - d. Unit Secretary
 - e. EMT
 - f. Student Externship
 - g. Other (*please specify*): _____

11. Have you functioned as a charge nurse?

- a. Yes
- b. No

12. Have you functioned as a preceptor?

- a. Yes
- b. No

13. What is your scheduled work pattern?

- a. Straight days
- b. Straight evenings
- c. Straight nights
- d. Rotating days/evenings
- e. Rotating days/nights
- f. Other (*please specify*): _____

14. How long was your unit orientation?

- a. Still ongoing
- b. \leq 8 weeks
- c. 9 – 12 weeks
- d. 13 – 16 weeks
- e. 17 - 23 weeks
- f. \geq 24 weeks

15. How many *primary* preceptors have you had during your orientation?

_____ number of preceptors

16. Today's date: _____

Drop down list of skills

Assessment skills
Bladder catheter insertion/irrigation
Blood draw/venipuncture
Blood product administration/transfusion
Central line care (dressing change, blood draws, discontinuing)
Charting/documentation
Chest tube care (placement, pleurovac)
Code/Emergency Response
Death/Dying/End-of-Life Care
Nasogastric tube management
ECG/EKG/Telemetry care
Intravenous (IV) medication administration/pumps/PCAs
Intravenous (IV) starts
Medication administration
MD communication
Patient/family communication and teaching
Prioritization/time management
Tracheostomy care
Vent care/management
Wound care/dressing change/wound vac
Unit specific skills _____

Appendix B: Permissions to Use Instrument

← → ↻ uchealth.org/professionals/professional-development/casey-fink-surveys/#:~:text=Thank%20you%20for%20your%20inquiry,used%20in%20your%... ☆

uchealth Kathryn Casey@dhha.org
Read her full biography **Doctors Specialties Locations** **Schedule Appointment** **Virtual Urgent Care** **COVID-19** **Menu**

These surveys were developed while we were employed at the University of Colorado Hospital Authority to elicit the voice of nursing students, graduate nurses, and nursing staff with hopes of enhancing their educational formation and advancing their contribution to leading change as health care professionals. Thank you for your inquiry to use one of the Casey-Fink Survey instruments.


You have permission to use these survey materials free of cost. In return, we request that you submit your contact information and a brief description of how the materials will be used in your practice setting.

Click a link below to go to the Survey Monkey form for that survey. Each takes only two to three minutes to complete. **After you submit the form, you'll be redirected to a page where you can download the survey materials.**

We are grateful for your participation and appreciate the information you share with us.

Sincerely,

Kathy Casey RN, MSN
Regina Fink, RN, PhD, AOCN, FAAN



Appendix C: Data Analysis Tables

Appendix C1

*Analysis of Variance (ANOVA) Testing Composite Comfort/Confidence Scores by Time Point
Summer 2020-2021 Cohort*

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	68.143	2	34.072	.663	.517
Within groups	8636.605	168	51.408		
Total	8704.749	170			

Appendix C2

One-way ANOVA Testing Comfort/Confidence Factors by Time Point for Summer 2020-2021 Cohort

A. Support factor

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	1.106	2	.553	3.792	.025
Within groups	24.501	168	.146		
Total	25.607	170			

Multiple Comparisons

Dependent variable: cfsupp
Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	.15334	.06556	.053	-.0017	.3084
	11 months	.17849	.07887	.064	-.0080	.3650
4 months	1 month	-.15334	.06556	.053	-.3084	.0017
	11 months	.02515	.08007	.947	-.1642	.2145
11 months	1 month	-.17849	.07887	.064	-.3650	.0080
	4 months	-.02515	.08007	.947	-.2145	.1642

B. Organization/Prioritization Factor

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	.787	2	.393	2.149	.120
Within groups	30.756	168	.183		
Total	31.543	170			

Multiple Comparisons

Dependent variable: cforgrp

Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	.03887	.07345	.857	-.1348	.2126
	11 months	-.14398	.08837	.236	-.3529	.0650
4 months	1 month	-.03887	.07345	.857	-.2126	.1348
	11 months	-.18286	.08971	.106	-.3950	.0293
11 months	1 month	.14398	.08837	.236	-.0650	.3529
	4 months	.18286	.08971	.106	-.0293	.3950

C. Communication/leadership factor

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	1.982	2	.991	6.691	.002
Within groups	24.878	168	.148		
Total	26.860	170			

Multiple Comparisons

Dependent variable: cfcomml

Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	-.15370	.06606	.055	-.3099	.0025
	11 months	-.27934*	.07948	.002	-.4673	-.0914
4 months	1 month	.15370	.06606	.055	-.0025	.3099
	11 months	-.12564	.08068	.267	-.3164	.0651
11 months	1 month	.27934*	.07948	.002	.0914	.4673
	4 months	.12564	.08068	.267	-.0651	.3164

*:The difference is significant at the 0.05 level

D. Professional satisfaction factor

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	1.905	2	.953	4.315	.015
Within groups	37.089	168	.221		
Total	38.994	170			

Multiple Comparisons

Dependent variable: cfprofs

Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	.20441*	.08066	.032	.0137	.3951
	11 months	.23005*	.09704	.049	.0006	.4595
4 months	1 month	-.20441*	.08066	.032	-.3951	-.0137
	11 months	.02564	.09851	.963	-.2073	.2586
11 months	1 month	-.23005*	.09704	.049	-.4595	-.0006
	4 months	-.02564	.09851	.963	-.2586	.2073

*:The difference is significant at the 0.05 level

Appendix C3

Composite Comfort/Confidence Scores and Independent t testing for Summer 2020-2021 Cohort

A. Composite Comfort/Confidence Scores Summer 2019-2020 Cohort

Time	\bar{x}	SD	N
11 months	69.22	(6.5532)	9

B. Independent Samples Test

	Levine's Test for Equality of Variances		t-test for Equality of Means				95% Confidence Interval of the Difference			
	F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Diff.	Std. Error Diff.	Lower	Upper
Equal variances assumed	3.091	.086	1.577	42	.061	.122	4.83492	3.06542	-1.35134	11.02118
Equal variances not assumed			1.846	15.811	.042	.084	4.83492	2.61863	-.72172	10.39156

Appendix C4

One-way ANOVA Testing Job Satisfaction by Time Point for Summer 2020-2021 Cohort

A. Satisfaction with amount of responsibility

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	3.653	2	1.827	2.895	.058
Within groups	106.008	168	.631		
Total	109.661	170			

Multiple Comparisons

Dependent variable: satresp
Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	.30249	.13636	.071	-.0200	.6249
	11 months	.28491	.16406	.195	-.1030	.6729
4 months	1 month	-.30249	.13636	.071	-.6249	.0200
	11 months	-.01758	.16654	.994	-.4114	.3762
11 months	1 month	-.28491	.16406	.195	-.6729	.1030
	4 months	.01758	.16654	.994	-.3762	.4114

B. Satisfaction with opportunities for career advancement

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	4.275	2	2.138	3.866	.023
Within groups	92.883	168	.553		
Total	97.158	170			

Multiple Comparisons

Dependent variable: caradvr

Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	.34583*	.12764	.020	.0440	.6477
	11 months	.25352	.15357	.227	-.1096	.6167
4 months	1 month	-.34583*	.12764	.020	-.6477	-.0440
	11 months	-.09231	.15589	.825	-.4609	.2763
11 months	1 month	-.25352	.15357	.227	-.6167	.1096
	4 months	.09231	.15589	.825	-.2763	.4609

*:The difference is significant at the 0.05 level

C. Satisfaction with amount of encouragement and feedback

	Sum of Squares	df	Mean Square	F	Sig.
Between groups	1.918	2	.959	1.700	.186
Within groups	94.760	168	.564		
Total	96.678	170			

Multiple Comparisons

Dependent variable: encfdr

Tukey HSD

(I) Time point	(J) Time point	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1 month	4 months	.13543	.12893	.546	-.1694	.4403
	11 months	.28048	.15511	.170	-.0863	.6473
4 months	1 month	-.13543	.12893	.546	-.4403	.1694
	11 months	.14505	.15746	.628	-.2273	.5174
11 months	1 month	-.28048	.15511	.170	-.6473	.0863
	4 months	-.14505	.15746	.628	-.5174	.2273

Appendix C5

Independent t Testing Job Satisfaction Items Between Summer 2020-2021 and Summer 2019-2020 Cohort at 11 months

Item	Cohort at 11 months	N	Mean	Std. deviation	Std. Error Mean
Responsibility	2020-2021	35	3.7714	(.97274)	.16442
	2019-2020	9	3.4444	(.88192)	.29397
Career advancement	2020-2021	35	4.0000	(.84017)	.14201
	2019-2020	9	3.5556	(1.13039)	.37680
Encouragement and feedback	2020-2021	35	4.0857	(.85307)	.14420
	2019-2020	9	3.2222	(1.20185)	.40062

Independent Samples Test

		Levine's Test for Equality of Variances				t-test for Equality of Means					
		F	Sig.	t	df	Significance One-Sided p	Two-Sided p	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
										Lower	Upper
Amnt of rspnsbly	Equal variances assumed	.004	.950	.915	42	.183	.365	.32698	.35734	-.39415	1.04812
	Equal variances not assumed			.971	13.478	.174	.349	.32698	.33683	-.39808	1.05205
Career advncmnt	Equal variances assumed	1.059	.309	1.317	42	.097	.195	.44444	.33737	-.23639	1.12528
	Equal variances not assumed			1.104	10.385	.147	.295	.44444	.40267	-.44827	1.33716
Encrgmnt and fdbck	Equal variances assumed	4.268	.045	2.485	42	.009	.017	.86349	.34745	.16231	1.56467
	Equal variances not assumed			2.028	10.167	.035	.070	.86349	.42578	-.08309	1.81008

Note. advncmnt=advancement; amnt=amount; encrgmnt=encouragement; fdbck=feedback; rspnsbly=responsibility