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Newly Licensed RN Retention

Hospital and Nurse Characteristics

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OBJECTIVES: The aims of this study were to examine the relationship between 1-year retention of newly licensed RNs (NLRNs) employed in hospitals and personal and hospital characteristics, and determine which characteristics had the most influence.

METHODS: A secondary analysis of data collected in a study of transition to practice was used to describe the retention of 1464 NLRNs employed by 97 hospitals in 3 states. Hospitals varied in size, location (urban and rural), Magnet® designation, and university affiliation. The NLRNs also varied in education, age, race, gender, and experience.

RESULTS: The overall retention rate at 1 year was 83%. Retention of NLRNs was higher in urban areas and in Magnet hospitals. The only personal characteristic that affected retention was age, with younger nurses more likely to stay.

CONCLUSION: Hospital characteristics had a larger effect on NLRN retention than personal characteristics. Hospitals in rural areas have a particular challenge in retaining NLRNs.

With ever increasing numbers of older people and more inclusive health insurance coverage, the future of healthcare will include a rising demand for nursing care, thereby worsening the current nursing shortage.[1] Although the number of newly educated nurses is on the rise, the stability of the nursing workforce is uncertain.[2] A major concern is the low retention of newly licensed RNs (NLRNs). Not only does the loss of a nurse affect the quality of care given, but each nurse who leaves costs the institution up to 1.3 times their salary to replace.[3]

Determining the actual retention rate (often reported as turnover) of NLRNs is difficult, and current estimates vary.[4] Previous research studies of overall RN retention have suggested that age, education, and experience of RNs as well as their work environment explain their job attitudes and their decisions to leave their jobs.[5-9] We know less about NLRNs and the predictors of their retention. Much of the research on turnover of nurses in general and specifically for NLRNs has focused on their intent to leave/stay, which might not translate into actual leaving. It is crucial to determine the predictors of actual NLRN turnover if we hope to reduce it.

Recent research has centered on the effects of nurse residency or transition to practice programs on retention[10] but has not examined the turnover rates by nurse or hospital characteristics. The purpose of the analyses reported here is to describe NLRN retention in the 1st year of employment in hospitals in relation to personal and hospital characteristics.

Background

Studies published between 2007 and 2016 were reviewed to estimate the current rate of NLRN turnover. Raw and weighted means (weighted by sample size) were calculated. From the studies that focused

on the effects of nurse residency and transition programs and reported the turnover rates only in hospitals with these programs, the raw mean turnover was 10.5%, and the weighted mean was 12.6%.[11-19] Three of those studies were based on small samples,[14,17,18] and 1 program required a 2-year commitment from their NLRNs,[17] thereby lowering the turnover rate. Another review of the transition to practice literature reached a similar conclusion; that is, the mean retention at 12 months after hire across 13 studies was 90.1%, and the mean turnover rate across 4 studies was 10.6%.[20] Two studies reported the results of 10 years of a structured NLRN residency program and found retention at 12 months to be greater than 92%.[13,16] These studies were focused on transition programs for NLRN and rarely explored hospital or personal characteristics as predictors.

Several large survey studies of NLRNs' job history included nurses employed in institutions with a variety of orientation practices. One found that, of the 533 Florida NLRNs responding, 35% had changed jobs within 1.5 to 2.5 years after graduation.[4] Another study of NLRNs from 34 states (n = 1653) reported that 15% of the NLRNs employed in hospitals left their 1st job by 1 year.[21]

Of studies that examined whether turnover rates differed by age, 2 studies reported no effect of age on turnover,[4,21] whereas 2 studies reported that younger NLRNs were more likely to leave their hospital job than older NLRNs.[11,18] In 4 studies, the rates of turnover by basic nursing education were compared. Two found that NLRNs with baccalaureate degrees were more likely to leave,[4,18] and 2 found no effect for education.[11,21] In only 1 study did previous experience in healthcare reduce turnover,[11] whereas 2 others did not find a relationship.[4,18] The only study examining the effects of type and length of shift on turnover found no effect.[21] Some of the inconsistencies across these studies were due to differences in statistical analyses, with some reporting the net effects in multivariate analyses,[4,21] whereas others reported the total effects from bivariate comparisons.[11,18]

One large study of unit-level turnover of all RNs (1884 units in 306 hospitals) reported that units with lower turnover were critical care units in Magnet® hospitals, teaching hospitals, and hospitals located in urban areas.[22] Overall, the average unit-level turnover rate was 11.9%. The only study of NLRNs that included hospital and unit characteristics in the analyses found no differences in retention as a function of hospital Magnet status or unit type.[21]

To update the existing information about NLRN retention, this study compared 1-year retention rates across groupings created using personal and hospital characteristics and determined which characteristics, if any, had the most influence on the NLRN's decisions to stay.

Methods

This longitudinal study of NLRN retention by their initial employer was based on data collected in a study funded by the National Council of State Boards of Nursing (NCSBN)[23] and approved by the Western Institutional Review Board. The NCSBN study of transition to practice programs was a multisite, randomized trial of the effects of a newly designed transition-to-practice (TTP) program.[23] Hospitals in 3 states (Illinois, North Carolina, and Ohio) agreed to participate; of these, 42 hospitals were randomly assigned to implement the new TTP program (study group), and 55 continued using their usual methods of transitioning new nurses (control group). To avoid confounding with the experimental transition program, hospitals using either the Versant or the University HealthSystem Consortium/American Association of Colleges of Nursing transition programs were excluded. Federal government hospitals were also excluded. The process of random assignment stratified the hospitals by size and urban/rural location.

Data/Measures

Hospital characteristics included size (number of inpatient beds), location (urban, suburban, rural), ownership (private not for profit, for profit, local government), Magnet designation, and university affiliation. Nurse characteristics, collected from online surveys completed at baseline and at 6 and 9 months after they joined the hospital, included age, basic nursing education, race, gender, experience as LPNs or nurse aide, shift, and type of unit. Shifts and units sometimes changed over the tracking period; the shift and unit from the 6- and 9-month surveys were used when available.

Retention was defined as NLRNs still employed by the hiring hospital at the end of the 1st year whether or not they were still on their initial unit. Those not retained could either have voluntarily left employment or left involuntarily (ill, injured, or terminated by the hospital).

Data Analysis

Analysis was done at the individual NLRN level. Means of continuous variables by category were calculated, and analyses of variance were done to determine significant differences. Bonferroni post hoc tests were used to determine which category differences were statistically significant when there were 3 or more categories of the independent variable. For nominal-level variables, the χ^2 technique was used to

examine differences in the distribution of the variables. Multivariate logistic regression was used to identify the most important characteristics predicting turnover. All predictor variables in the regression were considered categorical, and interactions were examined.

Results

The sample of hospitals and nurses was very diverse. The 97 hospitals varied greatly in size (25-932 beds) and in the numbers of NLRNs hired (1-85). The 1464 new nurses hired by these hospitals were not evenly distributed across the states, with 259 hired in 16 Illinois hospitals, 392 in 19 North Carolina hospitals, and 813 in 62 Ohio hospitals. Of the 97 hospitals, 29 had Magnet designation, and 20 were university affiliated. Although 87 of the hospitals were not for profit, there were 6 local government–owned and 4 for-profit hospitals.

The 1-year retention rate for all NLRNs in this study was 83%. As reported in previous articles from this project,[23,24] the retention rate of NLRNs varied little between the study hospitals (85%) and the control hospitals (83.3%). When control hospitals were divided into groups based on their existing transition to practice programs, those with established, evidence-based transition to practice programs had an average retention rate of 88%, and those with limited transition programs had an average retention rate of 75%.[23] In addition, the retention of NLRNs in hospitals with strong preceptor support was 86%, whereas the retention rate in hospitals with low preceptor support it was 80%.[24]

Retention Rates by Hospital Characteristics

The retention rates of NLRNs differed at statistically significant levels ($P < .05$) across hospitals with different characteristics and locations (Table 1). The retention rate was highest in Illinois (89%), lowest in North Carolina (76%), and in between in Ohio (84%). Urban hospitals had the highest retention rate (85%), whereas rural hospitals had the lowest retention rate (77%). The largest hospitals had the highest retention rates; those with more than 400 beds retained 87% of their NLRNs. Interestingly, hospitals between 200 and 299 beds had the lowest retention rate of 78%. Retention rates did not differ across hospitals with different types of ownership.

Hospitals with Magnet accreditation had markedly higher retention of NLRNs at 92%, compared with the 77% rate at non-Magnet hospitals. University-affiliated hospitals also retained more of their new hires, 88% compared with 82% for hospitals not associated with universities.

Table 1. *Retention Rate of NLRNs by Hospital Characteristics (Total NLRN = 1464)*

	Nurses Hired	Retention Rate, %	Statistical Significance
State			<.01[a]
Illinois	259	89	
North Carolina	392	76	
Ohio	813	84	
Location			<.01[b]
Rural	173	77	
Suburban	480	81	
Urban	811	85	
Hospital size (no. of beds)			<.05[c]
25-99	77	82	
100-199	201	82	
200-299	328	78	
300-399	268	82	
≥400	590	87	
Ownership			Not significant
Not for profit	1399	83	
Government not federal	34	85	
For profit	23	74	
Magnet			<.01
Yes	575	92	
No	889	77	
University affiliation			<.01
Yes	319	88	
No	1145	82	

[a]In post hoc testing, North Carolina is different from Illinois and Ohio; Illinois and Ohio are not significantly different.
[b]In post hoc testing, rural and urban are significantly different.
[c]In post hoc testing, hospital with 200 to 299 beds is significantly lower than hospital with more than 400 beds.

NLRN Retention by Nurse Characteristics

Newly licensed RNs' personal characteristic information came from voluntary completion of survey questionnaires by 1082 respondents. None of the differences in retention rate by nurse characteristics was as great as those across hospital characteristics (Table 2.) The only difference that reached a statistically significant level of $P < .05$ was across age groups: 88% of NLRNs 30 years or younger were retained, 81% of those aged 31 to 40 years stayed, and 84% of those older than 40 years stayed. There were no differences in retention rates by gender, race, type of unit, or previous hospital experience.

There were trends in the differences for education and shift (probability of significance, $P < .10$ but $P > .05$). Newly licensed RNs educated in a traditional baccalaureate program were more likely to stay (89%) than those educated in associate degree or diploma programs (84%) or in accelerated baccalaureate or master's entry programs (83%) ($P = .07$). Newly licensed RNs working rotating shifts were least

	Nurses Hired	Retention Rate, %	Statistical Significance
Nurse age, y			<.05[b]
20-29	752	88	
30-39	214	81	
40-61	107	84	
Gender			Not significant
Female	978	86	
Male	95	85	
Race			Not significant
White	956	86	
Nonwhite	126	85	
Education			.07
Associate or diploma	524	84	
Baccalaureate basic	464	89	
Advanced baccalaureate or master entry	83	83	
Shift			.08
Day	348	84	
Evening	110	88	
Night	426	89	
Rotating	179	83	
Unit			Not significant
Critical care	413	99	
Medical/surgical	549	84	
Pediatrics/maternity	68	90	
Psychiatric	9	89	
Operating room	7	100	
Subacute/transitional	15	88	
Previous experience			Not significant
Nurse aide	606	88	
LPN	47	85	

[a]The sample size does not equal to 1082 for each analysis because there were data missing for some variables.
[b]In post hoc testing, age group 20 to 29 years was found to be significantly lower than 30 to 39 years.

likely to stay (83%) (P = .08) compared with 84% for day shifts, 88% for evening shifts, and 89% for night shifts.

Multifactorial Analyses of Hospital Characteristics

Hospitals were not evenly divided across characteristics. Contingency tables with χ^2 analyses were done to determine where characteristics were confounded. Statistically significant disproportions included the following: 93% of the hospitals with less than 200 beds were located in rural areas, whereas 69% of hospitals with more than 300 beds were located in urban areas. Magnet-designated and university-affiliated hospitals were more likely to be in urban areas (50% and 60%, respectively). Furthermore, 62% of Magnet hospitals have more than 300 beds. Of the participating hospitals in Illinois, 56% were Magnet designated, compared with only 23% of the Ohio hospitals and 32% of the North Carolina hospitals. Given the lack of independence across these characteristics, multivariate analyses were conducted to identify the characteristics with the most impact on NLRN retention. Several models were tested including different combinations of variables and interactions. We chose to graphically present the statistically significant interactions between the hospital characteristics, which each had a statistically significant independent effect rather than numerically because the meaning of an interaction is best seen in a visual display.

The NLRN retention rates in Magnet-accredited hospitals were similarly high in all 3 states (89%-94%) (Figure 1). However, the retention rates in non-Magnet hospitals varied from 89% in Illinois to 80% in Ohio and 64% in North Carolina. Because the effect of Magnet designation on retention was stronger than any of the other characteristics, only the NLRNs from non-Magnet hospitals was used to describe the interacting effects of size and location. As shown in Figure 2, in the sample of 885 NLRNs hired by non-Magnet hospitals, both location and size had statistically significant effects on retention rates but the effects of size differed by location. All rural hospitals have less than 300 beds and had the lowest retention rates. However, small hospitals located in urban areas had the highest rates of retention. Small hospitals in suburban areas had retention rates close to 90%, but suburban hospitals between 200 and 299 beds retained just fewer than 70% of the NLRNs. Non-Magnet hospitals with more
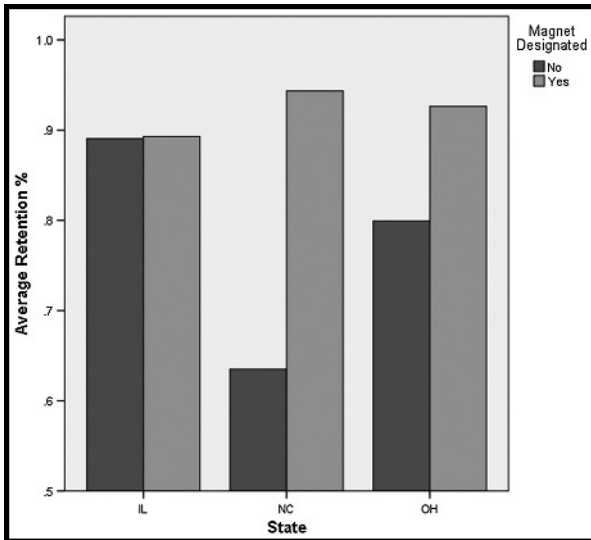
Figure 1. Average retention of NLRNs. All hospitals grouped by Magnet accreditation status and state.

than 300 beds had similar retention rates whether located in suburban or urban areas.

Analyses were also performed using only the NLRNs from non-Magnet hospitals to determine whether the individual characteristics of NLRNs had an effect on their retention when Magnet designation was not in play. The patterns of higher and lower retention were similar to the differences for the whole sample (Table 2); however, none of the differences or interactions were statistically significant in NLRNs from non-Magnet hospitals.

Although most hospital characteristics had some effect on retention, the analyses did suggest which factors had the greatest influence. Although hospitals with Magnet accreditation were more likely to be large urban hospitals, the effects of size and location on NLRN retention continued even with NLRNs from non-Magnet hospitals. The conclusions we can draw from the multifactorial analyses is that hospitals' Magnet status has the largest influence on NLRNs' decisions to remain with their 1st hospital employer and that state, urban/rural location, and size also affect retention of NLRNs.

Discussion

The 1st-year retention rate for NLRNs was 83% in this large sample from 97 diverse hospitals. Hospital characteristics have a greater impact on NLRN retention decisions than individual nurse characteristics, with higher retention rates in urban hospitals and Magnet-designated hospitals. Hospitals located in rural areas had retention rates lower than those in suburban or urban areas. Although small hospitals in rural areas had low retention rates, interestingly, small

hospitals located in urban areas had high retention rates. Retention rates also differed across the 3 states and were higher in university-affiliated hospitals.

Our finding of the major impact of Magnet accreditation on NLRNs retention is similar to the effect found in the recent unit-level turnover study[22] and in the general claims of Magnet hospital literature. However, some of the findings contradict what has been published in the literature. For example, in this study NLRNs younger than 30 years were most likely to stay, whereas in other studies, the youngest NLRNs were more likely to leave.[11,18] Previous work with all RNs reported that baccalaureate-educated nurses were more likely to leave,[4,6,8,18] but in this study, it seems that NLRNs with a traditional baccalaureate degree were more likely to stay than those with associate degrees, diplomas, accelerated baccalaureate, or master's degrees.

There were no differences in retention by gender, race, shift length, or unit type. Newly licensed RNs working evenings or night shifts were slightly more likely to stay than those working day shifts or rotating shifts. Previous work experience as a nursing assistant or LPN did not affect retention.

Limitations

Two limitations should be mentioned. These NLRNs were followed for only 1 year; previous work has shown that retention in the 1st job drops further in the 2nd year. The sample of NLRNs came from hospitals that volunteered to be a part of the NCSBN study and was not necessarily representative of all US hospitals. However, the NLRN sample was diverse with regard to age, race, and education and came from
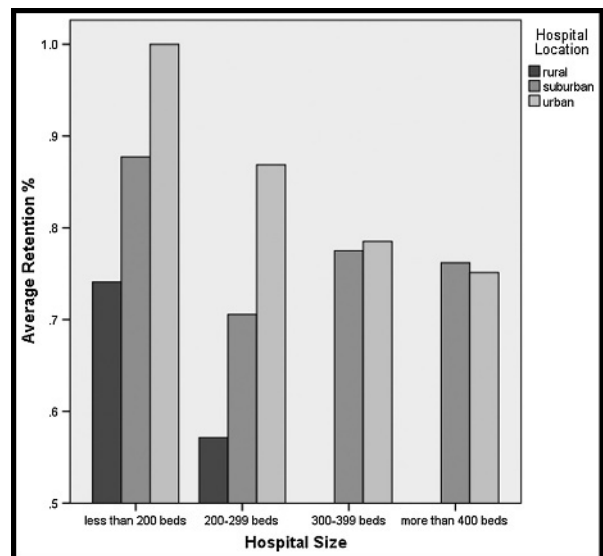

Figure 2. Average retention of NLRN employed in non-Magnet hospitals by location and size.

small and large hospitals located in rural, suburban, and urban areas of 3 different states. Furthermore, they were employed by hospitals from different ownership categories and were a mix of Magnet designated (or not) and university affiliated (or not).

Implications

The high retention rate in Magnet hospitals is consistent with the history of this concept; these hospitals report attracting and keeping their RN workforce. Our data did not support an analysis that would distinguish whether this effect is the better work environment created in Magnet hospital or other features of these hospitals. However, a recent study reported that RNs stated reasons for leaving their jobs in non-Magnet hospitals were more often work environment compared with those leaving from Magnet hospitals.[25] Magnet hospitals and university-affiliated hospitals both tend to be located in larger population areas, all of which may impact the hiring and retention of nurses.

Retention is lower in rural hospitals. Rural hospitals must work much harder to keep their NLRNs and face competition from hospitals in larger cities, which offer higher salaries in a more enticing place to live. Transition programs in rural hospitals have been reported to increase retention.[26]

If not Magnet designated, small hospitals in urban areas had the best retention rate. There are several potential explanations for this unique finding. First, small hospitals in urban areas may be specialty hospitals with a narrower focus in which NLRNs become comfortable sooner. Second, NLRNs may be more comfortable fitting into a smaller nursing staff that likely has compensation similar to the higher salaries in the large urban hospitals.

The higher retention rate for NLRNs with traditional baccalaureate degrees may indicate that our expectations must change. With the recent push for all RNs to have baccalaureate education, the historic difference in the rates of job change between non–baccalaureate- and baccalaureate-educated RNs may disappear.

This study did not have the data to determine why North Carolina's retention rate in non-Magnet hospitals was so much lower compared with the other 2 states; however, statistically significant differences have been found previously by region of the United States and by state.[22,27]

In conclusion, there is room for improvement in NLRN retention in their 1st job, particularly in non-Magnet hospitals. The challenge is particularly great in rural hospitals. Research suggests that transition (or residency) programs improve retention.[20]

References

1. American Nurses Association. (2014). Increased investment needed to produce 1.1 million RNs, Head off Nursing Shortage. American Nurses Association Web site. http://www.nursingworld.org/FunctionalMenuCategories/MediaResources/PressReleases/2014-PR/Increased-Investment-Needed-to-Produce-11-Million-RNs-Head-off-Nursing-Shortage-2.html. Accessed March, 2017.
2. Auerbach DI, Buerhaus PI, Staiger DO. Registered nurse supply grows faster than projected amid surge in new entrants ages 23-26. *Health Aff (Millwood)*. 2011;30(12):2286-2292.
3. Trepanier S, Early S, Ulrich B, Cherry B. New graduate nurse residency program: a cost-benefit analysis based on turnover and contract labor usage. *Nurs Econ*. 2012;30(4):207-214.
4. Unruh LY, Zhang NJ. Newly licensed registered nurse job turnover and turnover intent. *J Nurses Prof Dev*. 2014;30(5):220-230; quiz E8-E9.
5. Blegen MA, Mueller CW. Nurses' job satisfaction: a longitudinal analysis. *Res Nurs Health*. 1987;10:227-237.
6. Blegen MA. Nurses' job satisfaction: a meta-analysis of related variables. *Nurs Res*. 1993;42(1):36-41.
7. Brewer CS, Kovner CT, Greene W, Cheng Y. Predictors of RNs' intent to work and work decisions 1 year later in a U.S. national sample. *Int J Nurs Stud*. 2009;46:940-956.
8. Irvine DM, Evans MG. Job satisfaction and turnover among nurses: integrating research findings across studies. *Nurs Res*. 1995;44(4):246-253.
9. Zangaro GA, Soeken KL. A meta-analysis of studies of nurses' job satisfaction. *Res Nurs Health*. 2007;30(4):445-458.
10. Edwards D, Hawker C, Carrier J, Rees C. A systematic review of the effectiveness of strategies and interventions to improve the transition from student to newly qualified nurse. *Int J Nurs Stud*. 2015;52:1254-1268.
11. Beecroft PC, Dorey F, Wenten M. Turnover intention in new graduate nurses: a multivariate analysis. *J Adv Nurs*. 2008;62(1):41-52.
12. Fiedler R, Read ES, Lane KA, Hicks FD, Jegier BJ. Long-term outcomes of a postbaccalaureate nurse residency program: a pilot study. *J Nurs Adm*. 2014;44(7/8):417-422.
13. Goode CJ, Lynn MR, McElroy D, Bednash GD, Murray B. Lessons learned from 10 years of research on a post-baccalaureate nurse residency program. *J Nurs Adm*. 2013;43(2):73-79.
14. Kowalski S, Cross CL. Preliminary outcomes of a local residency programme for new graduate registered nurses. *J Nurs Manag*. 2010;18:96-104.
15. Kramer M, Halfer D, Maguire P, Schmalenberg C. Impact of healthy work environments and multistage nurse residency programs on retention of newly licensed RNs. *J Nurs Adm*. 2012;42(3):148-159.
16. Ulrich B, Krozek C, Early S, Ashlock CH, Africa LM, Carman ML. Improving retention, confidence, and competence of new graduate nurses: results from a 10-year longitudinal database. *Nurs Econ*. 2010;28(6):363-376.
17. Varner KD, Leeds RA. Transition within a graduate nurse residency program. *J Contin Educ Nurs*. 2012;43(11):491-499.
18. Weathers S, Raleigh ED. 1-Year retention rates and performance ratings: comparing associate degree, baccalaureate, and accelerated baccalaureate degree nurses. *J Nurs Adm*. 2013;43(9):468-474.

19. Williams CA, Goode CJ, Krsek C, Bednash GD, Lynn MR. Postbaccalaureate nurse residency 1-year outcomes. *J Nurs Adm*. 2007;17(7-8):357-365.

20. Rush KL, Adamack M, Gordon J, Lilly M, Janke R. Best practices of formal new graduate nurse transition programs: an integrative review. *Int J Nurs Stud*. 2013;50:345-356.

21. Brewer CS, Kovner CT, Greene W, Tukov-Shuser M, DJukic M. Predictors of actual turnover in a national sample of newly licensed registered nurses employed in hospitals. *J Adv Nurs*. 2011;68(3):521-538.

22. Staggs VS, Dunton N. Hospital and unit characteristics associated with nursing turnover include skill mix but not staffing level: an observational cross-sectional study. *Int J Nurs Stud*. 2012;49(9):1138-1145.

23. Spector N, Blegen MA, Silvestre J, et al. Transition to practice study in hospital settings. *J Nurs Regul*. 2015;5(4):24-38.

24. Blegen MA, Spector N, Ulrich BT, Barnsteiner J, Lynn MR, Silvestre J. Preceptor support in hospital transition to practice programs. *J Nurs Adm*. 2015;45(12):642-649.

25. Park SH, Gass S, Boyle DK. Comparison of reasons for nurse turnover in Magnet® and non-Magnet® hospitals. *J Nurs Adm*. 2016;46(5):284-290.

26. Bratt MM, Baernholdt M, Pruszynski J. Are rural and urban newly licensed nurses different? A longitudinal study of a nurse residency programme. *J Nurs Manag*. 2014;22(6):779-791.

27. Kovner CT, Brewer CS, Fatehi F, Jun J. What does nurse turnover rate mean and what is the rate? *Policy Polit Nurs Pract*. 2014;15(3-4):64-71.