

New Nurse Perceptions of Preparedness: Elements of Academic-Practice Gap

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Abstract

The education-practice gap, also known as the academic-practice gap is recognized as the difference between what a nursing student is taught and what the new nurse will experience in practice. This study evaluated specific education outcomes of schools of nursing in New Hampshire through surveys of new nurses and their employers. The responses were explored in relation to identified factors such as curriculum and clinical hours. The findings suggest that the new nurses felt prepared for practice, except in relationship to provision of care and medication administration for six or more patients. Of note is that 61% percent of participants were involved in errors and of these, 37.5% indicated that their education did not prepare them to administer medications to large groups. Evaluation of employer responses points to at least one and sometimes two levels of lower perception of perceived preparedness by the employer. The results highlight the differences between perceptions of preparedness of new nurse and employer, differences in perception of preparedness based on program type for specific gap elements, and the high rate of errors among new nurses. These results underscore the need for further research regarding the education practice gap, error factors, perceptions of preparedness for practice, and practice-readiness expectations of employers.

Keywords

Nurse, Education-Gap, Education Program, Preparedness, Competency

1. Introduction

Currently, nursing programs are evaluated primarily on the National Council Licensure Exam-RN (NCLEX-RN) first time pass rate for accreditation and regulatory purposes. This benchmark of first-time pass rate is not necessarily a true measure of practice-readiness [1]-[4]. Clark and Holmes (2007) [3] found that new nurses did not feel prepared for practice, despite successfully completing the na-

tional registration exam. Over 10 years ago, Candela and Bowles (2008) [2] identified that just over 50% of new nurses believed their education prepared them for the NCLEX-RN examination better than for practice. This is also iterated by Kavanagh and Szweda (2017) [4] who note that the academic-practice gap points to the problem of a focus on teaching to successfully complete the NCLEX-RN exam as compared to the skills necessary to practice safely and competently.

Benner *et al.* (2010) emphasize that nursing programs, through multiple interactions with the student in a practice setting, validate practice-readiness [5]. Identifying perceived academic-practice gap factors, such as types of clinical experiences, may help regulators in the evaluation of nursing programs, since different factors that may be manipulated by schools of nursing to improve the first-time pass rate and better prepare graduates for practice. Recognizing these factors may take the emphasis off focusing on passing the NCLEX and place it on practice-readiness.

The 2011 “The future of nursing: Leading change, advancing health” report by the IOM emphasizes the need to focus on education that includes communication and coordination of care among professions [6]. The report also emphasizes the need to improve nursing education [6]. The call to improve nursing education by academic and practice leaders underscores the need to comprehensively evaluate the effectiveness of those changes on practice readiness, and the academic-practice gap. Although new strategies for teaching nursing have been proposed and implemented by nursing programs, there is little evidence of their effectiveness. In addition to academic-practice partnerships, suggestions for improving nursing education recognized in the literature include the evaluation of practice-readiness expectations of new graduates, establishment of a rank ordering of competencies, identifying practice errors to discover areas for improvement, and seeking input from graduates for curriculum revision.

2. Methods

2.1. Purpose/Research Questions

The objectives of this study were twofold:

- To examine select elements of academic-practice gap as perceived by new nurses and their employers.
- To evaluate the congruency between employer and student perceptions of elements of academic-practice gap.

A tertiary analysis was to explore differences in the degree of gap perceived by new nurses and their employers in relation to specific nursing program factors. Program factors include number and type of clinical hours, number of program hours and type of program, retention rate, and first time NCLEX-RN pass rate. These factors are identified from publicly available annual report data, which is also included in current research by nursing education experts evaluating evidence provided from regulators across the country to develop evidence of what factors are used to evaluate nursing programs.

These identified gaps between education and practice are considered the

missing elements necessary for practice-readiness. These elements are associated with the research of Li and Kenward (2006) to “describe the elements of nursing education, perceived adequacy of preparation for practice...” by new nurses; and to “identify the [factors] of nursing education that lead to better preparation of new nurse graduates” [7]. Li and Kenward (2006) evaluated new nurse perspectives and added perspectives of nursing education programs. Nursing education programs in New Hampshire (NH) do not have a standardized evidenced-based curriculum, and as a result, adequacy of preparation must be evaluated by employers. There is no current literature available about employer’s perceptions of readiness linked to specific elements of the education practice gap. Employers and newly licensed nurses may assist in recognizing key educational components that improve transition to practice.

2.2. Design and Sample

With the focus on assurance of educational quality, this descriptive exploratory study surveyed new nurses’ and their employers’ perspectives related to the specific factors identified in the literature review and then compare the specific nurse/employer dyad responses. It was designed to explore the employer and new nurse responses in relation to specific factors of schools of nursing. The research study is a partial replication of Li and Kenward’s (2006) research presented in “A national survey on elements of nursing education” [7]. Li and Kenward (2006) developed the Elements of Nursing Education Study—Graduate Survey ($\alpha = 0.91$; 7), which was administered to the new nurse participants. In this partial replication study, the tool was administered to NH new nurses that graduated from NH schools of nursing and took the NCLEX for NH licensure. The new nurses’ employers were also queried. The additional dimension is the gap perceived by employers. Data reviewed were identified factors that impact nursing preparedness including number of clinical hours, number of theory hours, types of programs, first time NCLEX pass rate, and retention rate. These schools of nursing factors are the dependent variables and the graduates and employer identified elements are the independent variables.

2.3. Instruments

The instrument used for this research is the “Elements of Nursing Education Study—Program Survey” developed by Li and Kenward (2006) which was modified with approval from Dr. Li for this study. National Council State Boards of Nursing also provided permission to use the instrument. The instrument has been found to be reliable and valid with internal consistency ranging from 0.87 to 0.91 [7].

2.4. IRB Approval

Southern New Hampshire University Internal Review Board provided an expedited full approval. The lead researcher participated in “Protecting Human Research Participants” through the National Institutes of Health (NIH) Office of

Extramural Research.

3. Results

The new nurse response rate was 7.18% (66/919). VanGeest and Johnson (2011) note that response rate to nursing surveys are traditionally low, with better response rates to mixed methods of notification [8]. United States Postal Service (USPS) invitations of 32 participants were returned as undeliverable, and an additional 35 participants' emails also bounced back as undeliverable. Most participants that responded identify English as a first language (90.9%) and have graduated from an Associate Degree (AD) or Diploma program (69.6%). **Table 1** includes demographics for gender, race, and previous work as a Licensed Nursing Assistant (LNA) or Licensed Practical Nurse (LPN)/Licensed Vocational Nurse (LVN).

Table 1. Participant demographics.

Demographic Area	%
Gender Unanswered n = 1	1.5%
Female n = 59	89.4%
Male n = 6	9.1%
Asian - Other (e.g., Filipino, Japanese, Chinese, etc.) n = 3	4.5%
Black/African American n = 3	4.5%
Non-white Hispanic or Latino n = 1	1.5%
White n = 51	77.3%
White Hispanic or Latino n = 8	12.1%
No Previous Work as Nursing Assistant/Aide n = 23	34.8%
Yes, Previous Work as Nursing Assistant/Aide n = 43	65.2%
No Previous work as LPN or VN n = 55	83.3%
Yes, Previous work as LPN or VN n = 11	16.7%
Not Work in Same Facility as LPN and RN n = 2	28.6%
Yes, Work in Same Facility as LPN and RN n = 5	71.4%
Two Year (Associate Degree, Diploma) n = 46	70%
Bachelor's Degree or Direct Entry Master's n = 19	30%

The average age of participants was 31, with a minimum of 21 and maximum of 54 (**Appendix A**). Over a quarter (26%) of participants work in medical surgical setting; 20% work in critical care; and 11% selected "nursing"—a nonspecific category (**Appendix B**). Approximately 70% of participants responded they worked in hospital settings; 18.2% of participants indicated they worked in community or ambulatory care (**Appendix C**).

Three percent of participants had no orientation upon employment, and 50% received traditional orientation. Twenty-four percent received an internship/

preceptorship/mentoring in addition to a routine orientation (**Appendix D**). Li and Kenward (2006) [7] did not define “routine orientation” but it could be considered an orientation without a transition to practice program that uses preceptorships/mentoring for new nurses. Twenty-two percent indicated they participated only in an internship/preceptorship and mentoring program.

3.1. Participant Perceptions

Participants indicate that clinical did not prepare them to administer medications to large groups of patients (40.9%) or to provide care to six or more patients (51.5%) (**Appendix E**). Nearly 23% of participants indicated that the clinical component of their nursing program did not prepare them to supervise care provided to others.

Most nurses felt that they were definitely or somewhat prepared for practice, based on theoretical content (**Appendix F**). Approximately 20% of participants did not feel that didactic instruction prepared them to supervise care provided by other members of the health care team. A small percentage (10.6%) of participants also indicate that didactic instruction did not prepare them to delegate tasks, provide for spiritual care, or attend to a patient’s cultural needs.

All participants felt that faculties were either definitely or somewhat available to answer questions in class, answer questions in clinical settings, and assist with clinical skills. Fifty-three percent of participants answered that faculty were somewhat available to assist with classroom projects (**Appendix G**). Twenty-seven percent of participants responded that faculty somewhat provided the most current information in the classroom (**Appendix G**).

Seventy-three percent of participants indicated their current typical care assignments were just right. In contrast, 11% felt that they were not challenging enough, and 8% felt that their current client care assignments were challenging or difficult (**Appendix G**). Nine percent of participants indicated client care assignments were not applicable to their work situation.

3.2. Errors

Sixty-one percent of participants indicated they were involved in errors in care (**Appendix H**); of these, 43.9% were medication errors (**Appendix I**). Reportable errors included avoidable client death; two participants identified avoidable client death as errors. In the analysis of error data, it was found that six of the 43 participants (13.9%) involved with errors indicated English was not their first language. Of note, all participants who identified English as a second language were involved in errors. The majority (87.5%) of those involved in error/errors included medication error in their response. Eighteen (45%) participants were involved in at least 2 errors and nine (22.5%) participants were involved in at least 3 errors. Fifteen (37.5%) participants involved with error indicated that their clinical instruction did not prepare them to administer medications to large groups. Nineteen of 46 (41%) graduate participants of AD/Diploma programs were involved in error while only 6 (30%) BSN/ DEMN participants were in-

involved in error (**Appendix J**).

3.3. Employers

The employer response rate was 3%. For the majority, the employer's responses were one level less prepared, compared to the new nurse perceptions. For example, instead of "yes, definitely prepared", the employer chose: "yes, somewhat prepared". This suggests the employers perceived the new nurse was less prepared than the new nurse perceived. In one instance there were two levels of separation between perceptions of preparedness between the new nurse and the employer. There was one instance in which both the new nurse and the employer agreed that the new nurse was not prepared in one area. With limited response from employers, to protect possible identification by employees, the exact statistics and numbers are not being provided currently.

Results by Program Type

For further analysis, participants were separated into two groups, those who completed BSN/DEMN programs and those who completed an AD/Diploma program for licensure. A quarter of BSN/DEMN and almost half of AD/Diploma participants (48%) indicated that clinical experiences did not prepare them to administer medications to large groups (**Appendix K**). Sixty percent of BSN/DEMN participants and 48% AD/Diploma participants indicated that clinical experiences did not prepare them to provide care to six or more patients. Furthermore, over a third of BSN/DEMN participants (35%) and 15% of AD/Diploma participants indicated that the didactic portion of the nursing program did not prepare them to supervise care provided by others (**Appendix K**).

Most participants responded that their nursing education program did prepare them to delegate tasks to other members of the healthcare team (**Appendix L**). However, a higher proportion of BSN/DEMN participants responded that the didactic portion of the program did not prepare them to delegate tasks to other members of the healthcare team (25% to 4%) (**Appendix L**). There were higher proportions of the BSN/DEMN participants that did not feel prepared through didactic instruction, to meet client cultural and spiritual needs. Many respondents indicated that didactic instruction did prepare them to use information technology (books, journals, computers videos, audio tapes, etc.) to enhance the provision of care to clients. In contrast, 15% of BSN/DEMN and 4% of AD/Diploma participants did not feel prepared to use information technology.

Calculations of Z-score based on the difference of means were conducted on these two groups. The two groups Z-score (two tailed, 95% confidence) for the clinical questions related to administering medications, is 2.779 indicating that the AD/Diploma and BSN/DEMN groups are not the same, indicating the BSN/DEMN students felt better prepared than AD/Diploma participants. The supervision of care of others related to clinical preparation Z-score of -1.92 also indicates the groups are not the same, and that the BSN/DEMN participants perceived being less prepared. The Z-scores of -2.95 for the question about delegation of tasks and -1.99 for the question about faculty answering questions

during clinical activities also points to BSN/DEMN participants responding they were less prepared, and faculty were not available to answer questions during clinical activities (**Appendix M**).

An odds ratio was calculated on each question for each nursing program within the program type. The likelihood that a participant would say their current position was not challenging enough or too challenging in relation to their clinical preparation for supervising care in their clinical assignment was the only significance found. A student is 54% more likely to feel their clinical assignment was appropriate if they answered that they were exposed to clinical supervision skills in their training. The majority of participants felt faculty or instructors were generally available to answer questions in the classroom and clinical (**Appendix G** and **Appendix M**). Faculty assisting with clinical skills and answering questions was also positive. The lowest perceived satisfaction with faculty was the availability to assist with classroom projects for AD/Diploma (41%) nurses. Fewer BSN/DEMN participants (45%) felt faculty answered questions in clinical compared to 85% of AD/Diploma participants.

4. Discussion

4.1. New Nurse Perceptions

The select elements of the academic-practice gap examined suggest that the new nurse participants overall felt prepared for practice, except for a few areas. Unlike previous results of Clark and Holmes (2006), Dyess and Sherman (2009), and Oermann *et al.* (2010), the new nurses' responses indicated that they felt prepared to provide care, to make clinical decisions, and to contact physicians [3] [9] [10]. The reason for these improvements is unclear; however, an emphasis on critical thinking and competency of new nurses, and interprofessional practice requirements with resulting changes to curriculum to address these competencies may have impacted this perception of preparedness. One of these changes includes the use of Assessment Technologies Institute (ATI) or other testing throughout the program. Many programs in NH use ATI or another form of testing throughout their programs. The use of these types of testing is purported to incorporate critical thinking within the testing (ATI, n.d.). However, this focus on testing may undermine examining preparedness in other areas, such as clinical knowledge and skills.

The skills that new nurses felt less prepared to perform are linked to the behavioral skills found in the literature review. New nurse participants indicated feeling prepared to administer medications, but not to large groups, which agrees with the research of Kenward and Zhong (2006) [11] and Li and Kenward's (2006) [7]. Nursing students identified that administering medications earlier in their education may improve preparedness [12]. The perception of not being prepared to take care of six or more patients or supervise care of others may be linked to the perceptions of faculty availability. This may suggest faculty that are available and teaching the information, but the students are unable to

link the didactic learning to the practice setting. This may be indicative that educators are not situating the learner (connecting theory to practice), so that the student is unable to link what they learn to practice; or may be linked to clinical faculty that may be ineffective, or inexperienced in teaching. This may point to clinical faculty as a missing link in the academic-practice gap. Furthermore, this gap may be a result of clinical opportunities available through partnerships. Suggestions for improvement and further study include linking didactic and practicum, such as linking pharmacology to medication administration, ensuring didactic provides a link to practice situations [13]. Li and Kenward (2006) [7] note that their participants who felt better prepared were assigned to faculty who taught both the didactic and clinical components of the course. In addition, consideration of whether the faculty/instructor has current work experience in the clinical setting may be a factor that contributes to the academic-practice gap. Communication between didactic and clinical instructors of expectations of student outcomes linked to current practice may also be a missing link for preparedness. Overall new nurses felt that current information was provided in the classroom. However, over a quarter of participants (27.3% and 1.5%) did not always receive current information in the classroom. This was also noted by Monaghan (2015) who indicated that the theory practice gap begins within the didactic curriculum of a nursing program [14]. Kavanaugh and Szweda (2017) note the importance of faculty who are clinically current for clinical practicums [4]. The consideration of whether the didactic instructor is making the link to practice or the clinical instructor is unable to link to didactic is a question for further research. In New Hampshire, clinical nurse educators must be approved by the Board of Nursing. Requirements include a Master of Science in Nursing degree and a minimum of two years' clinical experience in the specialty area they will be teaching/overseeing clinical. Temporary nurse educator approval for one year is extended to those matriculating in an MSN program and who have two years' clinical experience in the specialty area they will be teaching. It may be worthwhile to conduct further research into whether experience in some clinical settings twenty years prior and only working in academia keeps the educator relevant and current.

4.2. Errors

Most new nurses identified errors within their practice, which link to the findings of Cantlay *et al.* (2017), Fater (2013) and Kavanaugh and Szweda (2017) identified areas of curriculum weaknesses of preparation with providing safe care, or in the areas of safety and quality of care [4] [15] [16]. Makary and Daniel (2016) emphasize that medical errors are a leading cause of death in the United States [17]. Medication errors in this study were the most frequently reported error (87.5%). Cantlay, Salamanca, Golaw *et al.* (2017) found that new nurses may feel strongly prepared in pharmacology but unprepared in the practical knowledge of administering medications [15]. With the Institute of Medicine (IOM) "Crossing the Quality Chasm: A new health system for the 21st Century"

(2001) report; the Institute of Medicine (2003) “Health professions education: A bridge to quality”, Chapter 6, “Recommendations for reform”; and the Institute of Medicine (2011) “The future of nursing: Leading change, advancing health the need to improve education programs to reduce errors;” it is surprising this trend of errors continues [6] [18]. The call for improvements in education and practice by the National Academies of Medicine (NAM—formerly IOM) still reverberates today with these findings. A secondary concern, besides patient harm is the stress and anxiety that occurs with errors, or trying to prevent them which impacts nurses confidence and ability to provide care [19]. The high rate of errors and multiple errors recognized by these new graduates may point to the nursing program focus on teaching to successfully complete the NCLEX-RN exam compared to that which is necessary to practice safely and competently [4]. Murray, Sundin, and Cope (2018) note that the study of new nurse errors may provide academia with knowledge for curriculum improvements that can reduce errors [20]. Over a third (37.5%) of participants indicated that clinical did not prepare them to administer medications to large groups. New nurses indicated administering medications to large groups is an essential element of nursing education. It is unclear how this may be improved upon unless practice partners mentor students or new graduates. The type of clinical practicum preparation or employer expectation of new graduates may need to be evaluated. Recommendations by Beauvais, Kazer and Aronson (2010), IOM (2001), and Murray, Sundin and Cope (2018) include collaboration between academia and practice settings (work force) for program improvements [18] [20] [21]. The American Association of Colleges of Nursing indicates that even though new nurses had participated in clinical at a specific organization, that there was a lack of communication between the nursing program and the healthcare organization regarding practice readiness. Bivin (2014) argues that separation of student nurses from the healthcare organizations they worked with in the past, has increased the academic-practice gap, and the gap is potentiated by not using the nurses working in the healthcare sector as preceptors [22]. Bivin (2014) emphasizes the need for academia to partner with nurses working with patients, so that students may be better prepared for the realities of nursing practice [22].

Almost a quarter of participants (24%) were involved in delays in treatment, and an additional 2.4% responded they were involved in avoidable client death. In the past, delays in treatment have been identified at approximately 20% [11], and the third leading cause of death in the United States is medical error [17]. Most recent information puts yearly death and disability related to diagnostic errors closer to 795,000 [23]. Recognizing patient deterioration and emergent situations is an important aspect of nursing care. This links directly to suggestion of Herron (2017) to place nursing students in their final term in high acuity areas to provide care to patients that are unstable, and to use simulation to emulate emergency situations in patient care [24]. If high acuity clinical settings are not available, simulation of high acuity situations could be provided in lieu of a hospital high acuity setting clinical practicum. After such changes are made,

further research of errors could be conducted to review results of this change.

4.3. Employer

The evaluation of the congruency between employer and student perceptions of elements of the academic-practice gap is limited due to the low response rate. The employer responses indicating that at least one and sometimes two levels lower of perceived preparedness in comparison to new nurse perception of preparedness may be linked to the research of Brown and Crookes (2006), who indicate that there is no consensus on specific skill sets among nursing educators and employers [25]. These results may suggest the need for improved dialogue between nursing educators and work force members to reduce the disconnect of what practice readiness expectations of new nurses are based on employer expectations. It may also require educating work force members about Benner's (2001) novice to expert work and having realistic expectations of new nurse abilities [5]. These results point to the need for future research comparing new nurse and employer perceptions of readiness as well as employer and education program's definition of "practice preparedness".

4.4. Perceived Gap and Program Factors

A tertiary analysis was to explore differences in the size of the gap perceived by new nurses and their employers in relation to specific nursing program factors. The AD/Diploma program outcome responses of perceptions of preparedness were generally higher than those of the BSN/DEM N students except for administering medications to large groups (48% AD/Diploma and 25% BSN/DEM N). Interestingly, the BSN/DEM N prepared students' perceptions of preparedness responses, and the z-scores suggest that they felt less prepared than AD/Diploma participants in providing care to six or more patients (BSN/DEM N 60% to AD/Diploma 48%); supervising care provided by others (40% to 15%); delegating tasks (25% to 2%), and legally documenting care (25% to 11%) (**Appendix K**). BSN/DEM N participants also answered not feeling prepared by the didactic portion of programs at higher rates than AD/Diploma participants. These include the areas of meeting client cultural needs (20% to 7%); supervising care provided by others (35% to 13%), and delegating tasks (25% to 4%) (**Appendix L**). The faculty or instructor availability provided similar results for both program types, except one area. The question regarding faculty "answer questions during clinical activity" responses showed less satisfaction for BSN/DEM N graduates (60%) compared to 85% AD/Diploma. Errors were reported more by BSN/DEM N participants at 65% compared to AD/Diploma at 56% (**Appendix J**). However, the larger cohort of AD/Diploma nurses does have twice the number of errors reported compared to BSN/DEM N nurses (**Appendix J**). According to Mohammad, Hossein and Abbas (2020) there are several ways to improve the didactic link to nursing practice including use of technology in the classroom, team based learning, interdisciplinary projects, and use of simulation [26].

These may be areas of consideration for nursing programs to improve the nurse education practice gap.

The number of clinical hours and the types of clinical hours varies by program in NH (**Appendix N** and **Appendix O**). The minimum number of clinical hours is 700 with the maximum of 1024. Note that there is a significant percentage of observation/experiential clinical in some programs with one program having 91 hours of observation/experiential learning that does not include hands-on patient care. According to Saifan, Devadas and Daradkeh *et al.* (2021) nursing students recognized that nursing clinicals should be linked to didactic and that there should be less focus on writing papers [27]. It is interesting to note that the BSN/DEMN programs on average have more clinical hours than AD/Diploma programs. Despite these higher numbers of hours, more BSN/DEMN participants than AD/Diploma participants indicated perceptions of being less prepared in several areas. This number is similar for didactic preparation with the BSN/DEMN average of 700 didactic hours and AD/Diploma 542.9, and that higher numbers of BSN/DEMN participants indicating that they were less prepared than AD/Diploma nurses.

It should be noted that overall, the students felt somewhat or prepared. This points to the need to explore the types of clinical and didactic content and perception of preparedness by specific programs. All programs represented in the study had a variety of responses to perceptions of preparedness without clusters of not being prepared by specific program. Besides reviewing responses linked to specific program hours, it is suggested that analysis based on retention rate and NCLEX first time pass rate by program be conducted. A program may have graduates with high levels of first-time pass rate, but those who also recognize elements in which they were not prepared either by clinical or didactic portions of their program. The varying success rates with first time NCLEX pass rates, linked to program retention rates and clinical hours, shows some programs have an inverse relationship between first time NCLEX pass rate and retention rates (**Appendix P**). Further research reviewing new nurse perceptions of preparedness linked to other program outcomes may improve understanding of nursing program success for boards of nursing. This will also provide information for suggestions for improvement of nursing programs' clinical or didactic.

5. Conclusions and Future Study

Overall, in this study, many new nurses felt prepared for practice. The results highlight the differences between perceptions or preparedness of new nurse and employer; and differences in perception of preparedness based on program type for specific gap elements. These results draw attention to the need for further research regarding the education practice gap, new nurse error, and new nurse and employer perceptions of preparedness. Areas for further research and review include evaluating new nurse error based on demographics, work environment, and the identified elements of the academic-practice gap. It is also

suggested to evaluate perceptions of preparedness based on orientation type and number and type of clinical hours of the participant's nursing program. Further research is also suggested in the evaluation of expectations of what employers perceive as a practice prepared nurse.

Limitations of the study include time constraints to conduct the research, which led to the small sample size, and single state for data collection. The major limitation of the study is lack of generalizability of results due to the small sample size, from one state. The work does set ground for a broader multistate analysis with a larger sample size. To improve results of this type of study, it is suggested to expand the participant pool to multiple states, to collect data monthly over a period of one to two years, to provide the participant code with the letter mailed via USPS, and finally, to provide follow up emails and then phone calls to non-responders. To improve employer responses, it is suggested to actively engage with nursing employers prior to the survey opening to improve results.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Appendix A

Participant Demographics

	Mean	Min	Max	St. Dev
Age in years all participants	31	21	54	
Age in years AD/Diploma Graduates	34	21	54	
Age in years BSN/DEMN Graduates	25	23	36	
Years working as NA before RN n = 43	4.1	0.5	16	3.8
Number of months employed	12	0	24	

Note. Associate Degree (AD); Bachelor of Science in Nursing (BSN); Direct Entry Masters in Nursing (DEMN); NA = Nursing Assistant.

Appendix B

Clinical Area Working

Setting	#	%
Medical Surgical	23	26.1
Critical Care	18	20.5
Nursing	10	11.4
Other Setting	4	4.5
Outpatient Clinic	4	4.5
Psychiatry	4	4.5
Home Health	3	3.4
Operating Room	3	3.4
Office Setting	3	3.4
Hospice	2	2.3
Labor and Delivery	2	2.3
Other Long-Term Care	2	2.3
Pediatrics	2	2.3
Postpartum	2	2.3
Rehabilitation	2	2.3
Public Health	1	1.1
Student Health	1	1.1
Subacute Unit	1	1.1
Transitional Care	1	1.1

Appendix C

Employment Facility Type

	#	%
Hospital	46	69.7
Community-based or ambulatory care facility/organization (including public health department, visiting nurses association, home health, physician's office, clinic, school, prison, etc.)	12	18.2
Long term care facility	7	10.6
Research nursing through a CRO	1	1.5

Appendix D

Onboard Training

Onboard Training	#	%
I participated in an internship/externship, preceptorship, or mentoring program either before or after being hired into a nursing position	15	22.7
I was given a routine orientation after being hired into a nursing position	33	50.0
I participated in an internship/preceptorship/mentoring program and had a routine orientation	16	24.2
I did not participate in an internship/preceptorship/mentoring program, and I also did not have an orientation.	2	3.0

Appendix E

Perception of Preparedness Based on Clinical Component of Nursing Program

	Yes, Definitely	Yes, Somewhat	No	N/A
Administer Medications	78.8%	21.2%	-	-
Administer Medications to Large Groups	21.2%	18.2%	40.9%	19.7%
Make Decisions Client Care	60.0%	38.5%	-	1.5%
Perform Psychomotor Skills/Tasks	63.6%	31.8%	3.0%	1.5%
Direct Care to 2 or more	86.4%	9.1%	3.0%	1.5%
Direct Care to 6 or more	15.2%	15.2%	51.5%	18.2%
Supervise Care Provided by Others	39.4%	36.4%	22.7%	1.5%
Delegate Tasks	42.4%	42.4%	13.6%	1.5%
Contact Client Physician	56.1%	36.4%	7.6%	-
Legally Document Care	50.0%	34.8%	15.2%	-
Teach Clients	66.7%	31.8%	1.5%	-
Work Effectively Within Team	67.7%	32.3%	-	-

Appendix F

Perception of Preparedness—Based on Classroom

	1-Yes, definitely	2-Yes, Somewhat	3-No	4-Activity Is Not Performed in My Setting
Client Emotional Needs	50.00%	43.94%	6.06%	-
Client Cultural Needs	42.42%	46.97%	10.61%	-
Client Spiritual Needs	39.39%	50.00%	10.61%	-
Understand the pathophysiology underlying clients' conditions	75.76%	24.24%	-	-
Recognize the desired actions, side effects and interactions of medications.	63.64%	33.33%	3.03%	-
Analyze multiple types of data when making client-related decisions	56.06%	39.39%	4.55%	-
Use information technology (books, journals, computers videos, audio tapes, etc.) to enhance care provided to clients.	54.55%	37.88%	7.58%	-
Supervise care Provided by Others	37.88%	40.91%	19.70%	1.52%
Delegate Tasks	39.39%	48.48%	10.61%	1.52%
Teach Clients	62.12%	37.88%	-	-
Appropriately utilize research findings in providing care	56.06%	39.39%	4.55%	-

Appendix G

Faculty Generally Available	Yes Definitely	Yes, Somewhat	No	Activity is not performed in my setting
Answer questions about content presented in the classroom	66.7%	33.3%	-	-
Assist with Classroom Projects	42.4%	53.0%	4.5%	-
Answer Questions During Clinical Activities	77.3%	22.7%	-	-
Assist with clinical skills such as giving IV meds, doing wound care, etc.	81.8%	18.2%	-	-
Did the faculty/instructors in your nursing education program provide the most current information in the classroom				# %
No				1 1.5
Yes, definitely				47 71.2
Yes, somewhat				18 27.3
In your opinion, are your current typical client care assignments:				# %
Just Right				48 73
Not challenging enough				7 11
This question is not applicable to my work situation				6 9
Too challenging or difficult				5 8

Appendix H

Errors after Licensure

Error Involvement	#	%
No, I have no knowledge of errors made at my institution	26	39
Yes, I have made errors or been involved in some way in errors made by others	40	61

Appendix I

Error Types

If you have been involved in errors, which of the following types of errors/incidents or occurrences have taken place? (Select ALL that apply)	#	%
Medication Errors	36	43.9
Client Falls	17	20.7
Delays in Treatment	20	24.4
Avoidable Client Death	2	2.4
Client Elopement	7	8.5
Total	82	

Appendix J

Errors by Program Type

Program Type	No Errors Reported	% of the No Errors Group	# Report Error	% of the Errors Group	% Reported by Program Type
AD/Diploma	20	77%	26	66%	56%
BSN/DEM N	6	23%	13	33%	65%

Appendix K

Perception of Preparedness Based on Clinical Component of Nursing Program by Program Type

AD or Diploma												
	Administer Common Meds	Administer Meds to large Groups	Make Decisions Client Care	Perform Psychomotor Skills/Tasks	Direct Care to 2 or More	Direct Care to 6 or More	Supervise Care Provided by Others	Delegate Tasks	Contact Client Physician	Legally Docu- ment Care	Teach Clients Within Team	Work Effectively
Yes, Definitely	72%	19%	64%	57%	89%	22%	43%	41%	59%	52%	76%	72%
Yes, Some- what	28%	13%	33%	37%	7%	11%	39%	48%	33%	74%	50%	28%
No		48%		4%	2%	48%	15%	9%	9%	11%	2%	
Not Applicable to Work Setting		19%	2%	2%	2%	19%	2%	2%				
BSN or MSN												
Yes, Definitely	90%	25%	50%	80%	80%		30%	45%	22%	45%	45%	58%
Yes, Somewhat	10%	30%	50%	25%	15%	25%	30%	30%	45%	30%	55%	42%
No		25%			5%	60%	40%	25%	5%	25%		
Not Applicable to Work Setting		20%				15%						

Note. Rounded to nearest whole number; Associate Degree (AD); Bachelor of Science in Nursing (BSN); Direct Entry Masters in Nursing (DEMNs); Medications (Meds).

Appendix L

Perception of Preparedness Based on Classroom Component of Nursing Program by Program Type

AD or Diploma											
	Client Emotion- al Needs	Client Cultural Needs	Client Spiritual Needs	Understand the patho- physiology underlying clients' conditions	Recognize the desired actions, side effects and interactions of medications	Analyze multiple types of data when making client-related decisions	Use information technology (books, journals, computers videos, audio tapes, etc.) to enhance care provided to clients.	Supervise care Provided by Others	Delegate tasks	Teach clients	Appropriate utilize research findings in providing care
Yes, Definitely	52%	43%	41%	76%	61%	61%	50%	43%	48%	65%	56%
Yes, Somewhat	39%	50%	50%	24%	35%	35%	6%	43%	46%	35%	37%
No	9%	7%	9%		4%	4%	4%	13%	4%		7%
Not Applicable to Work Setting									2%		
BSN or MSN											
Yes, Definitely	45%	40%	35%	75%	70%	45%	65%	25%	20%	55%	55%
Yes, Somewhat	55%	40%	50%	25%	30%	50%	20%	35%	55%	45%	45%
No		20%	15%			5%	15%	35%	25%		
Not Applicable to Work Setting									5%		

Note. Rounded to nearest whole number; Associate Degree (AD); Bachelor of Science in Nursing (BSN); Direct Entry Masters in Nursing (DEMN).

Appendix M

Faculty or Instructors of my Nursing Education Program Generally Available

AD/Diploma				
	Answer questions about content presented in the classroom	Assist with Classroom Projects	Answer Questions During Clinical Activities	Assist with clinical skills such as giving IV medications, doing wound care, et.
Yes, Definitely	74%	41%	85%	87%
Yes, Somewhat	33%	52%	15%	13%
No		7%		
BSN/DEM N				
Yes, Definitely	65%	45%	60%	70%
Yes, Somewhat	35%	55%	40%	30%
No				

Note. Rounded to nearest whole number; Associate Degree (AD); Bachelor of Science in Nursing (BSN); Direct Entry Masters in Nursing (DEM N).

Appendix N

New Hampshire Nursing Program Types of Clinical

BSN/DEMN Program	Clinical Hours + lab/sim and observation Total	Hands on Clinical Hours	Observation or Experiential	Lab Hours/simulation	Senior Seminar
K2	1024	979	0	45	0
L2	720	534	30	192	0
M2	843	815	0	28	0
N2	903	837	0	6	0
O2	700	500	0	200	0
P2	720	654	0	66	0
R2	872	644	32	196	0
S2	715	610	20	81	0
AVG	812.125	696.625	10.25	101.75	
Min	700	500	0	6	
Max	1024	979	32	200	
ST DEV	117.5140569	165.0332759	14.5577667	81.25576903	
AD/Diploma Program	Clinical Hours + lab/sim and observation Total	Hands on Clinical Hours	Observation or Experiential	Lab Hours/simulation	Senior Seminar
A1	738	561	0	105	0
B1	855	682.5	0	142.5	30
C1	823	585	91	147	0
D1	900	574	52	274	0
E1	744	532	24	188	0
F1	810	534	74	202	0
G1	810	661.5	73.5	75	0
H1	793.5	519	0	274.5	0
I1	893	658	46	189	0
AVG	818.5	589.6666667	40.05555556	177.4444444	3.333333333
Min	738	519	0	75	0
Max	900	682.5	91	274.5	30
ST DEV	57.38575607	62.20379812	35.55844172	68.4486324	10

Appendix O

Program Hours by Type

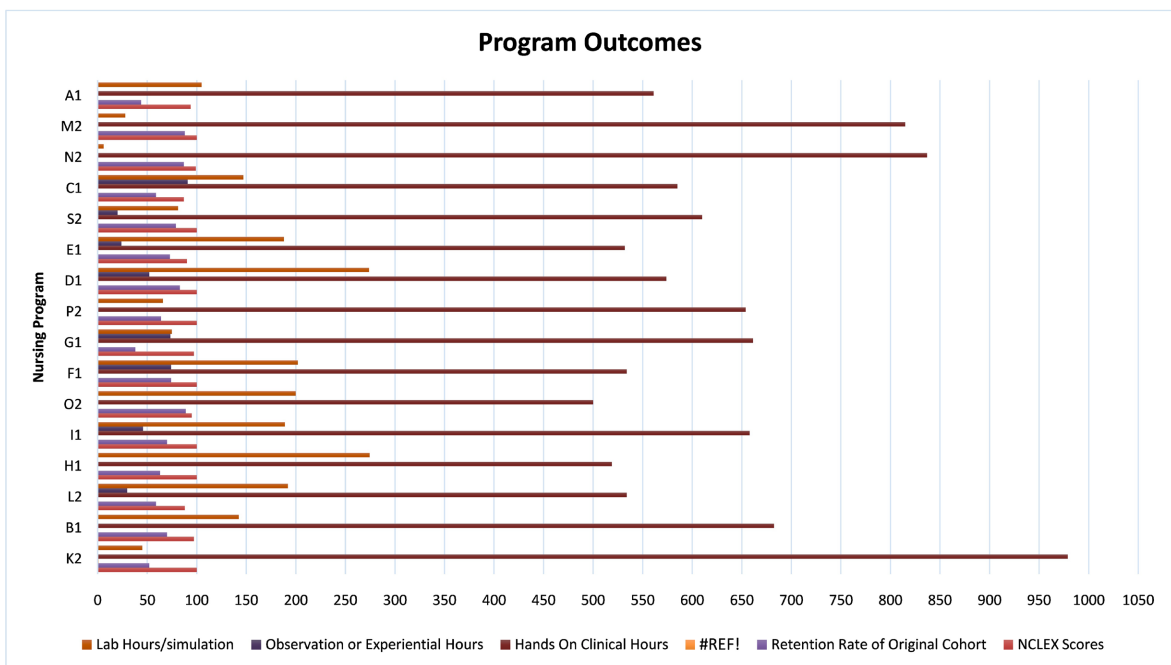
	Avg. Clinical	Min. Clinical	Max. Clinical	St. Dev. Clinical
AD/Diploma	798	645	900	81.3
BSN/DEMN	817	700	979	100.6

	Avg. Observation Clinical	Min. Observation Clinical	Max. Observation Clinical	St. Dev. Observation Clinical
AD/Diploma	40	0	91	35.5
BSN/DEMN	10.2	0	32	14.5

	Avg. Didactic	Min. Didactic	Max. Didactic	St. Dev. Didactic
AD/Diploma	542.9	255	900	293
BSN/DEMN	700	316	1277	267

Appendix P

New Hampshire Schools of Nursing Program Outcomes and Clinical Hours



Note Retention Rate and NCLEX scores are percentages.