ORIGINAL RESEARCH

Pacesetter curriculum: An experimental design evaluation of a clinical immersion model for nursing education

Cathy L. Rozmus[1], Deborah Jones[1], Stephanie Meyers[2], Patricia Hercules[3], Renae Schumann[4]

1. The University of Texas Health Science Center at Houston School of Nursing, Houston, Texas, USA. 2. Houston Methodist Hospital, Houston, TX, USA. 3. Memorial Hermann Healthcare System, Houston, Texas, USA. 4. Houston Baptist University, Houston, Texas, USA.

Correspondence: Cathy L. Rozmus. Address: School of Nursing, the University of Texas Health Science Center at Houston, 6901 Bertner Ave, Houston, Texas 77030, USA. Email: Cathy.L.Rozmus@uth.tmc.edu

Received: February 21, 2014 **Accepted:** March 28, 2014 **Online Published:** April 20, 2014
DOI: 10.5430/jnep.v4n6p60 **URL:** http://dx.doi.org/10.5430/jnep.v4n6p60

Abstract

Background/Objective: The two most common reported barriers to nursing education are limited faculty and clinical resources. This study evaluated a new curriculum designed to immerse students in full-time clinical experiences in their final semester.

Methods: This was a randomized controlled trial with a repeated-measures design. Students entering a BSN program were randomly assigned to either the new Pacesetter curriculum (50 students) or the traditional curriculum (92 students). Students in the traditional curriculum had didactic and clinical experiences each semester for four semesters. Pacesetter students completed didactic courses in the first three semesters and were in clinical 36 to 40 hours/week for the entire fourth semester. Outcome variables included course grades, HESI scores, NCLEX pass rates, graduation rates, first-year job retention rates, and PBDS performance. The data were analyzed by use of *t*-tests with a significance level of $p \leq .05$.

Results: Pacesetter students had significantly higher HESI scores (936) in the psychiatric nursing course than the traditional students (873) ($p < .05$), and the traditional students had significantly higher HESI maternity nursing scores (1002) than the Pacesetter students (932) ($p < .05$). There were no significant differences in course grades, graduation rates, or NCLEX pass rates. First-year job retention rates were 63% for traditional students and 100% for Pacesetter students ($p < .05$).

Conclusions: The Pacesetter students' clinical experiences allowed immersion in a clinical agency for an entire semester. Implications for nursing education include the redesign of nursing curriculum to allow total immersion in the clinical agency in the last semester.

Key words

Clinical immersion, BSN curriculum, Education-practice gap, Nursing education reform

1 Introduction

Nursing education reform tops the priority list for a variety of organizations, including the American Association of Colleges of Nursing, the National League for Nursing, and the Institute of Medicine [1, 2]. Two major barriers to under-

graduate nursing education are the faculty shortage and the scarcity of clinical resources. In addition, leaders in clinical practice describe an education–practice gap [3]. New nurses face a health care environment filled with information technology, more acutely ill patients, and ongoing changes in health care policy. In a review of the literature related to nursing curriculum reform, four major themes were identified: incorporating safety and quality competencies, re-designing conceptual frameworks, the content-laden curricula, and the use of alternative pedagogies [2]. To address these themes, nursing faculty need to address assumptions used in the design of nursing curricula. One assumption is that concurrent student experiences in the clinical setting are essential to student learning. Although rational explanations support this traditional approach in nursing education, the identified education–practice gap supports the need to explore innovative alternatives.

In many other professional education programs, content and concepts are delivered in the classroom setting first and are then later applied in more realistic practice settings. A number of benefits have been identified by students completing extensive clinical practicums, including real-world experiences, opportunities to link theory and practice, time to build competence and self-confidence, and being in settings where they felt welcome and part of the team [4]. The purpose of this study was to examine the assumption that student clinical experiences must be concurrent with didactic content in the classroom.

1.1 Literature review

According to the American Association of Colleges of Nursing, the greatest barriers to quickly and effectively increase nursing school enrollment to ease the current nursing shortage are lack of qualified faculty to teach and lack of clinical space to accommodate increased student numbers [5]. Yet state legislators mandate increases in nursing enrollment and offer incentives to schools able to increase the percentage of graduates each year. As a result, enrollment increases, but not to the desired extent because of the existent limitations. Schools are challenged to develop innovative programs that meet the legislative requirements while making the most of limited faculty and clinical resources.

Both the 2001 and the most recent 2010 Institute of Medicine reports emphasize the need to restructure and improve higher education to promote seamless academic progression [2, 6]. These calls for action charge schools of nursing to rethink and rework current educational models. The model described in this study requires students to complete didactic courses in the first three semesters and to spend 36 to 40 hours/week in the clinical setting for the entire fourth semester. This model challenges the nursing education status quo and provides a unique opportunity that may not only increase student skill and confidence in the clinical setting but also offer an experience that increases the understanding of nursing responsibilities.

Clinical immersion models introduced at four-year universities have been described in the literature [7-9]. In one model, students complete three 8-hour shifts per week over the two-semester clinical sequence [7, 8]. Although this clinical design provides students the opportunity to complete multiple shifts per week, it still precludes students from the experience of working a full-time 40-hour work week that more closely matches nursing practice.

Despite increases in nursing school enrollment, retaining students to graduation proves a challenge for several reasons [10]. Students' lives differ from the lives of their predecessors, and nearly every student has a story of hardship or challenges that must be overcome to be successful in school. Most students work several hours a week while in school, and many have responsibilities beyond school and a job. Social demands and standards, family expectations, and other life commitments often cause even those students with the greatest ability to multitask to give school a lower priority than is realistic for success. The expected result of this lower priority is failure of one or more courses, and in some schools, dismissal from the nursing program. Unfortunately, by the time most students fail the course or face program dismissal, they have already been in clinical courses and used those resources without the hospitals or the nursing field being able to realize a return on that resource investment.

Schools of nursing across the country implement innovations geared at retaining and graduating the best and the brightest. However, generational differences among the students create an unprecedented educational and curricular challenge

because students of one generation display different learning needs and preferences than their classmates who represent a different generation [11]. While many of the incoming nursing students have recently graduated from high school, another segment of the class is likely to be the same age as their classmates' parents and may demonstrate learning styles that are potentially better suited to traditional teaching methods. Younger class members who grew up using technology and who are easily bored with traditional methods may not adapt to this type of instruction. By contrast, the older students may not do as well using the fast-paced technology because of the knowledge acquisition required before its application [12]. Either way, one portion of the student group is at risk for failure simply because the teaching styles are incompatible with their learning styles.

Another challenge to retaining students to graduation is the shortage of clinical sites [13]. Schools have developed online courses and programs for students' convenience, which can assist students in completing the didactic course. But a need still exists for clinical hours, during which students give direct patient care in order to apply the concepts they have learned. The shortage of clinical sites presents a challenge as students are squeezed into the hospitals for a few hours a week.

Both schools and clinical agencies use simulations with or without high-fidelity mannequins to help students apply the theory. The advanced technology used by schools and hospital partners to promote student success is helpful because it addresses multiple learning styles. However, because most schools cannot simulate the actual fast-paced day-to-day activities, new graduates may be able to perform nursing skills, but they do so in a slower-paced environment that is not typical of acute care settings. Hospital educators then perceive that the new graduates are unable to perform and that they are not ready for the entry-level positions. Although these graduates were tested on nursing skills and were able to perform them while in a safe, controlled environment, they may not be able to transfer those same skills to the intense and high-pressured environment of the acute care facilities [3].

Also contributing to the nursing shortage is the number of new graduates who do not remain in the field. While in school, nursing students are taught to care for a single patient who receives all of the student's attention, including thorough research into medications, laboratory and diagnostic tests, treatments, and nursing process before actually providing care. Students have few opportunities for developing the higher-level time management and critical thinking skills necessary to render adequate care to more than one patient. Although nursing students are told about the need to learn to care for multiple patients, only the fortunate, exceptional students may receive the benefit of learning to care for two or more patients, and usually only during the final semester capstone course. However, as the idealistic new graduates enter the actual nursing workforce, they learn the real lessons of nursing and health care. They are thrust into busy hospital units and are expected to manage the care of four or more acutely ill patients. Even with the help and support of a preceptor or mentor who can serve the new hire as both an emotional support and knowledge base, the smart and well-educated graduate nurse pursuing a career in today's busy health care system can feel lost, alone, and ineffective [14, 15]. As noted in a survey conducted by the Nursing Executive Center (Advisory Board Company), a significant gap exists in the assessment of competencies of new graduate nurses. The survey showed that frontline nurse leaders believed that only 10% of new graduate nurses are fully prepared to provide safe and effective care, whereas academic leaders put the number at 90% [3].

Strategies have been employed to address the nursing shortage and the discrepancies between employer needs and skills of new nurses. One strategy is nurse residency or intern programs that provide systematic learning and work experiences in order to ease the transition of novice nurses to competent nurses. Such postgraduate residency programs have been successful in increasing job retention, confidence, clinical leadership, and skill competency [16, 17]. Most residency programs are post-graduation programs and put the full responsibility, including financial, staffing, and availability of physical resources, on the employing institution [18]. The needs of employers, however, are to hire nurses who are job ready and are able to adapt their skills immediately to the health care setting.

The Pacesetter model attempts to reconcile the education–practice disparity by frontloading the didactic portion of the course work and putting the students in the clinical setting only after they have successfully learned theory. In this way,

students do not waste faculty and clinical space resources. They then immerse themselves in the hospital clinical setting for a 16-week semester, learning to care for multiple patients at a time. Finally, the consistency of the clinical agency to which the students are assigned enhances students' and prospective employers' ability to begin to develop an employer-employee relationship. The purpose of this study was to examine the effects of the new Pacesetter model on student learning and clinical performance.

1.2 Traditional curriculum

The traditional curriculum assessed in the present study was a typical baccalaureate nursing curriculum. Students progress through the program by completing didactic courses and the related clinical throughout the same semester. The upper division nursing courses are a four-semester sequence taken over consecutive semesters, including summer semester. Table 1 shows the traditional curriculum.

1.3 Pacesetter curriculum

In this curriculum, all students complete the same first-semester course curriculum, which was the current 15-semester-hour traditional sequence. Beginning in semester 2, the curriculum sequence changes for the Pacesetter group. Tables 1 and 2 compare the curriculum sequences for the Traditional (control) group and the Pacesetter (experimental) group. Pacesetter students have the combined didactic and clinical for the course Psychiatric Mental Health Nursing and the didactic course Nursing Research Critique and Utilization. However, they do not follow the path of the traditional students but complete only the didactic portions of Adult Health Care 2 and Reproductive Health Care.

Table 1. Traditional Curriculum

Semester 1			**Semester 2**		
N3511	Health Assessment	3	N3523	Adult and Older Adult Health Care II	4
N3515	Adult Health Care I	6	N3523B	Adult and Older Adult Health Care II	3
N3517	Pathophysiology	3	N3526	Psychiatric and Mental Health Care	6
N3540	Pharmacotherapeutics	3	N4512	Research Critique	2
			N3521	Gerontologic Nursing	2
Semester 3			**Semester 4**		
N3532	Reproductive Health Care	4	N4521	Community Health Nursing Practice	4
N3532B	Reproductive Health Care	2	N4521B	Community Health Nursing Practice	3
N3536	Child and Adolescent Health Care	4	N4528	Management of Patients in High Acuity Settings	2
N3536B	Child and Adolescent Health Care	2	N4528B	Management of Patients in High Acuity Settings	4
N4527	Professional Practice and Leadership	3	N4530W	Critical Synthesis Applications	1

Table 2. Pacesetter Curriculum

Semester 1			**Semester 2**		
N3511	Health Assessment	3	N3523	Adult and Older Adult Health Care II	4
N3515	Adult Health Care I	6	N3526	Psychiatric and Mental Health Care	6
N3517	Pathophysiology	3	N4512	Research Critique	2
N3540	Pharmacotherapeutics	3	N3532	Reproductive Health Care for BSN	4
Semester 3			**Semester 4**		
N3521	Gerontologic Nursing	2	N3523B	Adult and Older Adult Health Care II	3
N3536	Management of Patients in High Acuity Settings	4	N3532B	Reproductive Health Care	2
N4527	Professional Practice and Leadership	3	N3536B	Child and Adolescent Health Care	2
N4521	Community Health Nursing Practice	4	N4521B	Community Health Nursing Practice	2
N4528	Child and Adolescent Health Care	2	N4528B	Management of Patients in High Acuity Settings	4
			N4530W	Critical Synthesis Applications	1

In semester 3, Pacesetter students complete the didactic portion of the remainder of the clinical courses, which include Child and Adolescent Health Care, Community Health Nursing, and Management of Patients in High Acuity Settings.

They also complete Gerontologic Nursing, which is primarily a didactic course with few clinical hours. Both groups take the nonclinical course Professional Practice and Leadership during semester 3. To supplement the nonclinical third semester, Pacesetter students participate in clinical simulations and case studies to promote application of the course content.

The greatest curricular change occurs in semester 4. Having completed all the didactic portions of every course, Pacesetter students spend the fourth and final semester completing the clinical portions of the five clinical courses. These students spend 36 to 40 hours per week in the various hospital units until the clinical objectives for all five clinical courses are met. Because the successful completion of the HESI exit exam is a requirement for the BSN program, both groups take Critical Synthesis Application, during which the exam is administered.

Pacesetter students are divided into groups of 10 students each, and each group spends 2 to 3 full-time weeks in each of the clinical areas, depending on the numbers of clinical clock hours necessary to meet the course objectives. For example, the clinical portion of Adult Health Care 2 requires 135 clock hours to complete the 3-credit-hour clinical (1 credit hour = 45 clock hours). Thus, students spend 3 full-time weeks to complete those clinical course objectives. Reproductive Health Care requires 90 clock hours to complete the 2-credit-hour clinical, so students spend 2 full-time weeks in that clinical area. Skills lab and simulation experiences completed during the first three semesters are included in the clinical hours for the fourth semester. For example, in Child and Adolescent Health Care, students complete 8 hours of skills and simulation labs in semester 3. They also complete 8 hours of Pediatric Emergency Assessment, Recognition, and Stabilization (PEARS) training during semester 3. In semester 4, they have 2 hours of orientation and complete six 12-hour shifts. The combination of these experiences gives the students the 90 hours of clinical time needed for a 2-credit-hour clinical course.

2 Methods

2.1 Design

A randomized controlled trial with a repeated-measures design was used to compare the traditional curriculum to the Pacesetter curriculum. Students entering in the fall of 2010 were asked to volunteer to be in the Pacesetter curriculum. All but one student volunteered. Students were then randomly assigned to either the control group (traditional curriculum) or the experimental group (Pacesetter curriculum). Both groups of students completed the curriculum in four consecutive semesters. Institutional Review Board approval was obtained before the initiation of the study.

2.2 Setting

The study was conducted at a school of nursing in a health science center in the southern United States in cooperation with a major health care system in a large metropolitan area. The School of Nursing has approximately 1100 students in baccalaureate, masters, and doctoral programs. Approximately 600 students are in the BSN program. The school has 62 full-time faculty and 57 contract clinical faculty. Clinical agreement contracts are maintained with approximately 600 clinical agencies.

Students in the traditional program had clinical experiences in multiple agencies and health care systems during each semester. Students in the Pacesetter curriculum had all of their acute care clinical experiences in the same health care system. The collaborating health care system has one major medical center hospital including the nation's busiest level 1 trauma center, eight suburban hospitals, three heart and vascular institutes, a rehabilitation hospital, a children's hospital, a sports medicine institute, eight cancer institutes, a neuroscience institute, and a chemical dependency treatment center.

2.3 Participants

Participants in the study were the fall 2010 cohort of incoming unlicensed BSN students. Students had completed a minimum of 60 credit hours of prerequisite courses before enrollment. Demographic data included student age, gender,

science grade point average (GPA), nursing prerequisite GPA, overall GPA, and whether the student had a previous degree. These data are reported in Table 3.

Table 3. Admission and Demographic Characteristics

	Overall GPA	Prerequisite GPA	Science GPA	Gender	Age, years (mean)	Previous Degree
Traditional Curriculum	3.41	3.63	3.62	F=80 M=12	27.67	24%
Pacesetter Curriculum	3.34	3.60	3.59	F=41 M=9	25.80	28%

2.4 Procedures

By use of a random numbers table, students were randomly assigned to the control group (traditional curriculum) or the experimental group (Pacesetter curriculum). Students were together in the same didactic courses every semester. In the first semester, the experimental group had their clinical experience in the cooperating health care system. During the second and third semesters, Pacesetter students had only one clinical course: Psychiatric and Mental Health Care. In the fourth semester, the experimental group completed all clinical hours for five clinical courses by working 36- to 40-hour weeks in clinical. Some clinical rotations were traditional group clinical experiences with one faculty member overseeing a group of 10 students, whereas other clinical experiences such as High Acuity were precepted experiences. Decisions on the clinical experiences for the experimental group were made through collaboration of faculty and clinical agency staff. All course requirements for both groups were identical.

2.5 Outcome measures

Outcome measures were typical educational student learning outcome measures. These included course grades, HESI scores, NCLEX pass rates, first-year job retention rates, and graduation rates. Course grades were primarily exam grades. Both groups were given the same exams. Specialty HESI exams published by Elsevier were given at the conclusion of each didactic course. An Exit HESI Exam that simulates NCLEX was given during the fourth semester for all students. HESI exams provide three types of scores: a raw score, a national percentile score, and a conversion score. In this study, the raw score was used. The reliability and validity of the HESI exams have been reported in several studies [19, 20]. For those graduates who became employed at the cooperating health care system, performance scores on the del Bueno's Performance Based Development System (PBDS) were compared. The PBDS has been used to examine new graduates' critical thinking skills. del Bueno has reported on the reliability and validity of the PBDS [21, 22]. One year after graduation, Practice Readiness Surveys were distributed to graduates and their employers but the return rate was too low for these results to be analyzed and included in this article. The Practice Readiness Surveys were a modified version of the surveys conducted by the Nurse Executive Board [3]. One-year job retention rates at the collaborating health care system were calculated for each group. Data were provided by the human resources department for the health care system.

2.6 Statistical analysis

Demographic data were analyzed by using descriptive statistics. Group comparisons were conducted by using the chi-square test for nonparametric data (see Table 3) and independent t-tests were conducted for parametric data (see Tables 3-5). A significance level of $p < .05$ was used to determine statistical significance.

Table 4. Course Grades

Course	Traditional Curriculum (mean)	Pacesetter Curriculum (mean)
Adult and Older Adult Health Care II	86.3	85.8
Psychiatric and Mental Health Care	88.63	88.52
Research Critique	91.2	92.9
Reproductive Health Care	85	85.2
Child and Adolescent Health Care	87.36	88.3
Management of Patients in High Acuity Settings	88.29	88.59
Community Health Nursing Practice	86.98	87.97

Table 5. HESI scores

Course	Traditional Curriculum (mean)	Pacesetter Curriculum (mean)
Adult and Older Adult Health Care II	855	906
Psychiatric and Mental Health Care	873	936*
Reproductive Health Care	1002	932*
Child and Adolescent Health Care	924	908
Management of Patients in High Acuity Settings	931	946
Community Health Nursing Practice	966	976
Exit	1016	1034

*Significantly different from traditional curriculum, $P < .05$

3 Results

The fall 2010 cohort of incoming BSN students served as the participants in the study. One student requested to be in the traditional program and was placed in the traditional group. One hundred forty-one students were then randomly assigned to either the traditional group or the experimental group. Because of the unknown clinical burden on the cooperating health care system, a decision was made collaboratively to have 50 students in the experimental group. Therefore, there were 92 students in the traditional group and 50 students in the experimental group.

There were no significant differences between the groups in admission data (see Table 3). In addition, there were no significant differences between the groups in gender, age, or the number of students with previous college degrees (see Table 3).

Academic outcomes were compared between the two groups. There were no statistically significant differences in course grades between the control group and the experimental group ($p > .05$; see Table 4). HESI exams were given at the conclusion of the didactic courses. There were no significant differences in HESI scores except for two courses (see Table 5). Pacesetters had significantly higher HESI scores (936) in the psychiatric nursing course than did the traditional students (873) ($p < .05$), and the traditional students had significantly higher HESI obstetric nursing scores (1002) than did the Pacesetter students (932) ($p < .05$).

The NCLEX pass rate was 100% for the Pacesetter students and 98% for the traditional students. The graduation rate was 84% for the Pacesetter students and 86% for the traditional students. A total of 20 students in both programs were employed after graduation by the collaborating health care system. All were given the PBDS assessment upon employment. The first-time pass rate was 33% for the traditional group and 62% for the Pacesetter group. The first-year job retention rate at the collaborating health care system was 63% for the traditional group and 100% for the Pacesetter group ($p < .05$). The 18-month job retention rate was 50% for the traditional group and 90% for the Pacesetter group. However, this difference was not statistically significant ($p = .06$).

4 Discussion

The gap between nursing education and practice in the first job has been identified by nurse leaders as an issue for safe and efficient patient care [3, 7]. As a result, clinical residency programs have been developed by clinical agencies to bridge the education–practice gap. In their nursing education, students care for few patients and often attend clinical only 1 day per week, which prevents them from seeing the continuum of patient care. Time management skills are not developed and the opportunity to interact with the inter-professional health care team is limited. The Pacesetter model was developed to allow the student the opportunity to "live the life of a nurse" while still in school. Students are working the schedule of a nurse and participating in the care of patients several days consecutively. Because students had prolonged contact with staff on the unit, trust was developed and staff allowed students more opportunities and independence in patient care.

 ISSN 1925-4040 E-ISSN 1925-4059

A concern of faculty was the academic performance of the students who were not in clinical during the didactic portion of their education. The educational assumption was that the clinical experiences would reinforce the content and that the experiences were essential to learning the content. Students in this study were randomly assigned to either the traditional curriculum or the Pacesetter curriculum and academic outcomes were compared. We found that the Pacesetter students performed as well academically as did their traditional curriculum counterparts. In addition, they performed as well on the NCLEX. There is limited evidence from the results of those who took the PBDS that the Pacesetter graduates were stronger in their clinical skills. Job retention rates for the first year after graduation were also higher for the Pacesetter students. An area for future exploration is the orientation time for traditional curriculum graduates versus Pacesetter graduates.

Nursing faculty shortages and scarcity of clinical resources have been identified as two of the major barriers to undergraduate nursing education [5]. Students who fail didactic courses use valuable clinical resources. For the Pacesetter group, 100% of the students entering the final clinical semester graduated, passed the NCLEX, and entered the workforce.

A major strength of the design of this study was the randomization of the students to two different curricula. Few studies in nursing education research have used an experimental design. A limitation was the inability to get enough data on employment performance after graduation. Evaluation of new graduate competencies was attempted but the return rate was too low to analyze these data. Further data are needed on the post-graduation clinical performance of the Pacesetter graduates.

Many lessons were learned with the first cohort of Pacesetter students. Students were extremely anxious before the start of clinical in the fall semester. For the next cohort of Pacesetter students, an intensive simulation experience was conducted before the beginning of the final clinical semester. The need to strengthen the simulation experiences of all students was identified. Scheduling of content in the second semester was identified as a concern. With this cohort, the faculty followed their normal content schedules. As a result, students in the obstetric course were learning content on major complications of pregnancy before they had content on hypertension and diabetes in Adult Healthcare II. This mismatch in scheduling may be an explanation for the difference in HESI scores between the traditional group and the Pacesetter group.

5 Conclusion

The current nursing education model is based on students taking didactic and clinical courses concurrently, which is unlike other professions such as physical therapy. The results of the present study show that moving the majority of the clinical education to the final semester does not have a negative impact on student learning and may improve clinical competency. Further research is needed on the long-term outcomes of the Pacesetter graduates.

Authors' contributions

Cathy Rozmus was the PI for the project, analyzed data, and wrote the first drafts of the manuscript. Deborah Jones was the Assistant Dean of the Undergraduate Programs. She participated in the management of the project and in writing the manuscript. Stephanie Meyers was the director for the study. She participated in data collection and management of the project. Patricia Hercules was responsible for clinical placements in the collaborating health care system and participated in the design of the study. Renae Schumann participated in the planning and initiation of the project.

Acknowledgements and funding

Two of the presidents of the university provided funding for the project.

References

[1] Giddens J, Brady D, Brown P, Wright M, Smith D, Harris J. A new curriculum for a new era of nursing education. Nurs Educ Perspect. 2008; 29: 200-4. PMid:18770947

[2] Forbes MO, Hickey MT. Curriculum reform in baccalaureate nursing education: review of the literature. Int J Nurs Educ Scholarsh 2009; 6: Article27. Epub 2009 Aug 14.

[3] Berkow S, Virkstis K, Stewart J, Conway L. Assessing new graduate nurse performance. Nurse Educ. 2009; 34: 17-22. PMid:19104340 http://dx.doi.org/10.1097/01.NNE.0000343405.90362.15

[4] Ralph E, Walker K, Wimmer R. Practicum and clinical experiences: postpracticum students' views. J Nurs Educ. 2009; 48: 434-40. PMid:19681532 http://dx.doi.org/10.3928/01484834-20090518-02

[5] American Association of Colleges of Nursing. Nursing faculty shortage fact sheet. Washington (DC): American Association of Colleges of Nursing; 2009.

[6] Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, Institute of Medicine. The Future of Nursing: Leading Change, Advancing Health. Washington (DC): National Academies Press; 2010. Available from: http://www.iom.edu/Reports/2010/The-future-of-nursing-leading-change-advancing-health.aspx

[7] Diefenbeck CA, Plowfield LA, Herrman JW. Clinical immersion: a residency model for nursing education. Nurs Educ Perspect. 2006; 27: 72-9. PMid:16733969

[8] Herrman JW, Diefenbeck C. The nurse residency model: a clinical immersion model for curricular change. Deans Notes. 2009; 30: 1-2.

[9] Svejda M, Goldberg J, Belden M, Potempa K, Calaraco M. Building the clinical bridge to advance education, research, and practice excellence. Nurs Res Pract. 2012; 2012: 826061.

[10] Pitt V, Powis D, Levett-Jones T, Hunter S. Factors influencing nursing students' academic and clinical performance and attrition: an integrative literature review. Nurse Educ Today. 2012; 32: 903-13. PMid:22595612 http://dx.doi.org/10.1016/j.nedt.2012.04.011

[11] Walker JT, Martin T, White J, Elliott R, Norwood A, Mangum C, Haynie L. Generational (age) differences in nursing students' preferences for teaching methods. J Nurs Educ. 2006; 45(9): 371-4. PMid:17002084

[12] Mangold K. Educating a new generation: teaching baby boomer faculty about millennial students. Nurse Educ. 2007; 32(1): 21-3. PMid:17220763 http://dx.doi.org/10.1097/00006223-200701000-00007

[13] Leners D, Sitzman K, Hessler KL. Perceptions of nursing student clinical placement experiences. Int J Nurs Educ Scholarsh. 2006; 3: Article 24. PMid:17049044 http://dx.doi.org/10.2202/1548-923X.1267

[14] Hayes LJ, O'Brien-Pallas L, Duffield C, Shamian J, Buchan J, Hughes F, et al. Nurse turnover: a literature review. Int J Nurs Stud. 2006; 43: 237-63. http://dx.doi.org/10.1016/j.ijnurstu.2005.02.007

[15] Hayes LJ, O'Brien-Pallas L, Duffield C, Shamian, J, Buchan J, Hughes F, et al. Nurse turnover: a literature review-an update. Int J Nurs Stud. 2012; 49(7): 887-905. http://dx.doi.org/10.1016/j.ijnurstu.2011.10.001

[16] 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): 73-9. PMid:23314789 http://dx.doi.org/10.1097/NNA.0b013e31827f205c

[17] Setter R, Walker M, Connelly LM, Peterman T. Nurse residency graduates' commitment to their first positions. J Nurses Staff Dev. 2011; 27(2): 58-64. http://dx.doi.org/10.1097/NND.0b013e31820eee49

[18] National Advisory Council on Nurse Education and Practice. Addressing New Challenges Facing Nursing Education: Solutions for a Transforming Healthcare Environment. Eighth Annual Report to the Secretary of the U.S. Department of Health and Human Services and the U.S. Congress. March 2010.

[19] Adamson C, Britt R. Repeat testing with the HESI exit exam- sixth validity study. Comput Inform Nurs. 2009; 27: 393-7. PMid:19901576 http://dx.doi.org/10.1097/NCN.0b013e3181bcae08

[20] Morrison S, Adamson C, Nibert A, Hsia S. HESI Exams: an overview of reliability and validity. Comput Inform Nurs. 2008; 26(5 Suppl): 39S-45S. PMid:18791390

[21] Fero LJ, Witsberger CM, Wesmiller SW, Zullo TG, Hoffman LA. Critical thinking ability of new graduate and experienced nurses. J Adv Nurs. 2009; 65: 139-48.

[22] del Bueno D. A crisis in critical thinking. Nurs Educ Perspect. 2005; 26: 278-82. PMid:16295306