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NCSBN Research Brief

Report of Findings

Exploring the Value of Continuing Education Mandates

June Smith, PhD, RN
National Council of State Boards of Nursing, Inc. (NCSBN)

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Mission Statement

The National Council of State Boards of Nursing, composed of Member Boards, provides leadership to advance regulatory excellence for public protection.

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Acknowledgments

This study could not have been completed without the 1,025 nurses from across the United States who took the time to fill out lengthy survey questionnaires. The information they provided will contribute to the understanding of the effectiveness of continuing education mandates. The project also owes a debt of gratitude to the 2001 National Council of State Boards of Nursing Board of Directors; Practice, Education and Regulation Committee; and Finance Committee for their review and support of this project. The author also gratefully acknowledges the assistance of Lamika Obichere in coordinating the study and Matt Diehl for his patient handling of study materials. Finally, the assistance of Rosemary Gahl in the preparation of this document was essential to completion of this study.

J.S.

Executive Summary

Establishment of a link between mandatory continuing education (CE) and the development of professional competence has been deemed crucial to future decision-making about the best methods of assuring the continued competence of health care practitioners. The National Council of State Boards of Nursing (NCSBN) Research Department developed a research study to explore that issue. The plan for the study was reviewed and approved by the NCSBN Board of Directors in 2001.

NCSBN was joined in the study by the regulatory agencies for medical technologists, occupational therapists, physician assistants, physical therapists and respiratory therapists through the Interprofessional Workgroup for Health Professions Regulation (IWHPR). This report presents the results from registered nurse (RN) and licensed practical/vocational nurse (LPN/VN) study respondents.

The study was conducted May through August of 2002.

Research Design and Methods

Assumptions

The study was based on two sets of assumptions. The first was that all health care professionals must possess certain categories of abilities in order to provide safe, effective care and services. It was assumed that all health care professionals must be able to perform the following 10 professional abilities:

1. Collect correct information in a timely manner.
2. Identify clients' current needs.
3. Identify clients' future needs.
4. Work effectively within a health care team.
5. Perform procedures common to their professional practice.
6. Recognize situations in which intervention is needed to improve outcomes or prevent harm.
7. Assess client or service outcomes (e.g., responses to treatment, satisfaction with services, etc.).
8. Recognize when their own abilities are inadequate to manage the situation at hand (recognition of the limitation of one's own knowledge and skills).
9. Recognize areas of their own practice in need of improvement.
10. Record a clear, understandable and legally defensible account of care or services provided.

The second assumption concerned the various factors contributing to the development of professional abilities. It was assumed that the following factors contribute to the development of the abilities listed within the first assumption:

- Basic professional education.
- Professional work experience.
- Continuing education (including in-service education, continuing education offerings, short professional courses and formal academic coursework whether leading to a higher degree recognized by the profession or not).
- Informal education from mentors or preceptors or other people who work with the professional and give advice or information.

- Self-study (referral to reference books, texts, drug references, journal articles, etc.).
- Other – anything else that may have had a part to play in building professional abilities.

Questionnaire

A questionnaire, which contained three sections with an optional profession-specific data page, was created specifically for this project. The first section of the questionnaire included questions related to the 10 professional abilities listed in the first research assumption. Respondents were asked to provide three estimates for each of the abilities: beginning ability and current ability on a 0-100 scale, and the contribution of the six factors listed in the second research assumption to the development of their current ability. The respondents distributed 10 points among the six factors according to their perceptions of the factors' contributions to their current ability.

The second section contained questions related to the numbers and types of continuing education hours accumulated by the professional within the past year. The types of continuing education included total hours on all topics, hours on topics directly related to current work, hours on topics attended to prepare for a new position or extra duties not related to current work, and hours on topics attended only to fulfill continuing education mandates (topics unrelated to current or future work).

The third section contained a number of questions related to issues influencing professional abilities and/or the accumulation of continuing education hours.

Research Questions

1. What is the relationship between mandated continuing education and self-perception of professional abilities?
2. Do continuing education mandates influence the number and type of continuing education offerings attended?
3. What is the relationship of continuing education to the attainment of professional abilities?
4. What professional abilities are most influenced by continuing education?
5. To what degree do initial professional education, professional work experience, continuing education, professional mentors or preceptors and self-study contribute to the attainment of professional abilities?
6. What is the relationship between years of practice and self-perception of professional abilities?
7. What is the relationship between the number of continuing education offerings attended and the number of professional organizations to which the professional belongs?
8. To what extent do professionals have access to mentors or preceptors, continuing education classes and sources of current health care information within their day-to-day working environments?
9. What are the relationships among access to mentors or preceptors, continuing education classes and sources of current health care information and attainment of professional abilities?

Survey process

A four-stage mailing process was used to send questionnaires to 4,000 randomly selected nursing subjects (2,000 LPN/VNs and 2,000 RNs). A preletter announcing the research project and the imminent arrival of a survey was sent, followed by the survey with cover letter and return envelope. A reminder postcard was sent one to two weeks after the survey mailing. A second survey was mailed to nonrespondents approximately six weeks after the initial survey mailing.

Return Rates

There were a total of 305 questionnaires sent to bad addresses (158 LPN/VN and 147 RN), and a total of 1,025 questionnaires were returned (478 from LPN/VNs and 547 from RNs) for an overall 27.7% return rate, and a return rate of 26% for LPN/VNs and 30% for RNs.

Report of Results

Description of Sample

The RNs answering the survey had been in practice an average of 16.7 years (SD 11.7 years) and in their current positions an average of 6.4 years (SD 6.8 years). The LPN/VNs reported practicing for an average of 16.9 years (SD 11.1 years) and in their current positions an average of 8.9 years (SD 9.3 years).

The majority of the RNs reported working in hospitals (53%) with 7% working in long-term care, 7% in home health and 5% in the office setting. The majority of the LPN/VNs reported working in long-term care (31%), hospitals (27%), office settings (15%) and home health settings (6%).

Most of the RN (60%) and LPN/VN (78%) respondents reported holding staff nurse, office nurse or clinic nurse positions. Six percent of the RN respondents reported holding advanced practice nurse positions, and 10% reported being managers. Managerial positions were held by 3% of the LPN/VN respondents. Most of the respondents reported providing direct care to clients within their nursing practices (85% of RNs and 95% of LPN/VNs).

Of the RN subjects, 86, or 17%, reported diploma basic education; 175, or 35%, reported associate degree education; and 185, or 37%, reported baccalaureate education. Education outside the U.S. was reported by 4% of the RN respondents.

The RN and LPN/VN subject groups both had 61% of respondents working in states requiring CE for continued licensure. There were 108, or 10%, who held additional certification in nursing and 80 of those were also licensed in a state requiring CE for license renewal (these were included in the 61% described above). A variable was created that divided the nurses into those with a mandate (either from the state licensing board or a certifying body) to accumulate CE, and those who were not mandated in any way to collect CE hours. That variable was used in the following analyses.

CE Hours

The RN respondents reported collecting (during the preceding 12 months) an average of 35.2 total continuing education hours, with 28.3 related to current work, 6.5 related to new or future duties and 4.2 unrelated to their work or interests. The LPN/VN respondents collected about 28 total hours, with 21.7 hours related to current

work, 7 hours related to new duties and 5.7 hours unrelated to their work or interests.

The RNs and LPN/VNs who had CE mandates collected more total hours and hours related to current work, but the differences were not statistically significant. The RN and LPN/VN respondents with a CE mandate collected significantly (statistically significant at $p<.05$) more hours of CE unrelated to their current or future work than did those without such a mandate. If the unrelated CE hours are subtracted from the total CE hours for those with and without a CE mandate, the difference in the total number of hours accumulated by those with and without a CE mandate narrows to about three. This would indicate that nurses attended approximately the same numbers of CE hours related to current or future work with or without a mandate.

Beginning and Current Ability Levels

Subjects were asked to estimate their beginning (at the start of their first nursing position) and current abilities in 10 ability categories. Beginning ability estimates for the RN respondents ranged from 30 to 49 and from 30 to 45 for the LPN/VN respondents. Current ability estimates ranged from 78 to 87 for the RNs and 75 to 85 for the LPN/VNs. Both the RNs and the LPN/VNs provided the lowest beginning and current ability estimates for Ability 3 (identifying clients' future needs) and the highest beginning estimates for Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand). The RN respondents provided the highest current ability estimates for Ability 4 (working effectively within a health care team), and the LPN/VN respondents provided the highest current ability estimates for Ability 5 (performing procedures).

Beginning ability estimates were subtracted from current ability estimates for each subject to make new variables called "growth" for each ability category.

Factors Contributing to Current Ability

Subjects were asked to distribute 10 points among six factors (basic professional education, work experience, CE, mentors or preceptors, self-study and other) according to the factors' contributions to their current ability in each of the ability categories. On average, subjects gave the greatest number of points to work experience and the second largest number to basic professional education. Lower numbers of points were distributed to mentors or preceptors, CE, self-study and other, in that order.

RN and LPN/VN estimates of the contributions of the factors differed only slightly. The LPN/VN respondents estimated a significantly higher contribution from work experience than did RNs for Abilities 2 (identifying clients' current needs), 6 (recognizing situations in which intervention is needed to improve outcomes or prevent harm), 7 (assessing client outcomes) and 10 (documenting care provided). The RN subjects estimated a significantly higher contribution from CE than did LPN/VNs for Abilities 2 (identifying clients' current needs) and 10 (documenting care provided); and a significantly higher contribution from mentors or preceptors for Abilities 5 (performing procedures) and 8 (recognizing when your own

abilities are inadequate to manage the situation at hand).

The estimates of the contributions of factors were compared for those with and without CE mandates. There were only two small, but statistically significant, differences found. The LPN/VN subjects without a CE mandate estimated a slightly higher contribution of basic education for Ability 3 (identifying clients' future needs) than did those with a CE mandate. The RN subjects without a mandate estimated a slightly higher contribution of mentors or preceptors for Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand) than did RNs with a mandate.

Correlations of Growth With Contributing Factors

Growth in each of the 10 ability categories was correlated with the contribution attributed to basic education, work experience, CE, mentors or preceptors, self-study and other factors. Nine sets of correlations were run:

- All nurse subjects
- Nurses with a CE mandate
- Nurses without a CE mandate
- All RNs
- RNs with a CE mandate
- RNs without a CE mandate
- All LPN/VNs
- LPN/VNs with a CE mandate
- LPN/VNs without a CE mandate

Results for the RN data demonstrated several consistent findings across all 10 ability categories. There was a moderate negative correlation of growth with initial professional education for RN subjects with and without a CE mandate. This indicated that the more the RNs had grown, the less they attributed that growth to their initial professional education. There was also a small to moderate positive correlation of growth with work experience for RNs with and without a CE mandate, meaning that the more the RNs had grown, the more they attributed that growth to their work experience.

The data from the RNs with a CE mandate also demonstrated some small to moderate correlations with several other factors. There were small to moderate positive correlations of growth with the contribution of mentors or preceptors for three ability categories, including Abilities 5 (performing procedures), 2 (identifying clients' current needs) and 8 (recognizing when your own abilities are inadequate to manage the situation at hand). There was a small to moderate negative correlation of "other" with growth (the more contribution the subject had estimated from other factors, the less the subject had grown) for Ability 4 (working within a health care team). There was only one small positive correlation of growth with CE and that was for Ability 10 (documenting care provided).

The LPN/VN correlations also demonstrated the negative correlations of growth with initial education for nine of the 10 ability categories. A positive correlation of growth with work experience was found for LPN/VNs with and without a CE mandate for seven of the 10 ability categories.

There were several other significant correlations of growth with contributing factors for LPN/VN subjects. There were small to moderate negative correlations of growth with self-study for LPN/VNs with a CE mandate for Ability

4 (working effectively within a health care team), and for LPN/VNs without a CE mandate for Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand). There was a small to moderate negative correlation of growth with the contribution of mentors or preceptors for LPN/VNs without a CE mandate for Ability 7 (assessing client or service outcomes); and a positive correlation of growth with the contribution of CE for LPN/VNs without a mandate for Ability 1 (collecting correct information in a timely manner).

Comparisons of Growth Between Nurses With and Without CE Mandates

Growth in each of the 10 ability categories was compared for nurses with and without a CE mandate. ANCOVA analyses were performed on the data from all nurses, data from RNs and data from LPN/VNs. Total CE hours, years in current position, years in practice, credit hours and beginning ability estimates were used as covariates. No significant or practically relevant differences were found in the amount of growth experienced by nurses (all nurses, RNs or LPN/VNs) with and without CE mandates.

Issues Influencing Growth in Abilities

A number of questions on the survey addressed various work setting and continuing education issues that might influence growth in abilities. Many of these issues were directly or indirectly related to the nurses' delivery of safe, effective care. There were some differences seen in these issues for those nurses with and without CE mandates.

One important issue was access to CE. Only 78% of the RN and 65% of the LPN/VN respondents reported that their employers provided adequate continuing education for their professional needs. The provision of CE varied by type of nurse and by type of employment setting. In hospitals, 87% of RNs and 86% of LPN/VNs reported receiving CE from their employer; however, 71% of RNs and only 48% of LPN/VNs working in long-term care reported receiving CE from their employers.

When asked about barriers to participation in CE, 43% of the RNs and 45% of the LPN/VNs reported that they sometimes or frequently were not allowed time off for continuing education. This was a problem for a greater percentage of RNs working in hospitals and for more LPN/VNs working in long-term care.

RNs with a CE mandate were more likely to report getting CE from professional organizations/conferences (75% with a mandate and 66% without) and from academic institutions (43% with a mandate and 27% without). Both RN and LPN/VN respondents with a CE mandate were more likely to report receiving CE from CE vendors than were those without a mandate (RN – 69% with and 47% without; LPN/VN – 63% with and 29% without). Those nurses with a CE mandate were more likely to take correspondence classes to earn CE (RN – 30% with and 10% without; LPN/VN – 42% with and 11% without). Only 25% of the RN respondents and 12% of the LPN/VN subjects reported using the Internet for CE.

Another issue of importance to respondent nurses was the reimbursement of expenses for professional development. About 60%

of the RN respondents and 50% of the LPN/VNs reported being reimbursed for one or more aspect(s) of professional development.

Experienced, professional assistance within the health care setting may play a major role in professional development and the delivery of safe care. While approximately half the nurse respondents to this study reported that their employing institutions had a formal mentoring program, most of them reported that these programs were only for new employees. About 75% of RNs and LPN/VNs working in hospitals reported having access to staff development personnel, but only 40-50% of those working in nursing homes reported the same. When asked about the availability of experienced professionals to answer questions, 69% of the RNs and 75% of the LPN/VNs reported having access to such people most or all of the time, and 25% of the RNs and 21% of the LPN/VNs reported having such individuals available at least some of the time.

Comparison of Growth in Abilities Across Work Setting Population Densities

Survey respondents were asked to identify the population of their geographic area of employment. Growth in all 10 ability categories was compared across population areas using beginning ability as a covariate. Nurses working in areas of lower population demonstrated significantly lower growth than those in areas of higher population in five of the 10 ability categories: 3 (identifying clients' future needs), 6 (recognizing situations in which intervention is needed to improve outcomes or prevent harm), 7 (assessing client outcomes), 8 (recognizing when your own abilities are inadequate to manage the situation at hand) and 10 (documenting care provided).

Conclusions

1. Nurses tend to accumulate CE hours whether or not they are mandated to do so.
2. Nurses with a CE mandate attend more hours of CE unrelated to their work or interests.
3. Nurses consider work experience as the greatest contributor to their current levels of ability.
4. Those nurses with and without CE mandates estimate the same levels of growth in 10 professional abilities.
5. Access to CE and other factors related to professional learning varies among nurses in different work settings and possibly among nurses in different population settings.
6. Nurses with CE mandates may have greater access to some sources of CE such as CE vendors because nurses with mandates are targeted by those providers.
7. Nurses in lower population areas experience less growth in some abilities than do those in more populous regions.

Report of Findings

Exploring the Value of Continuing Education Mandates

Background of Study

Health care regulatory bodies are charged with protection of the public from the unsafe practices of health care professionals. Boards of nursing must prevent unsafe individuals from entering the nursing profession, and monitor the maintenance of adequate ongoing competence. While licensure testing has become an accepted means of assuring entry-level nursing competence, effective assessment of ongoing competence has provided a much greater challenge. Mandatory accumulation of continuing education hours has been a means of assuring the maintenance of an adequate knowledge base for 22 of the 61 boards of nursing in the United States and its territories. The actual effect of such mandates on the attainment of professional abilities has not been explored.

The findings from the National Council of State Boards of Nursing (NCSBN) Continuing Education Effectiveness study are reported here in the sixth of a series of monographs called NCSBN Research Briefs. These briefs provide the means to quickly disseminate NCSBN research findings.

Establishment of a link between mandatory continuing education and the development of professional competence has been deemed crucial to future decision-making about the best methods of assuring the continued competence of health care practitioners (McGuire, Stanhope & Weisenbeck, 1998; Hewlett & Eichelberger, 1996; Slusher, Logsdon, Johnson, Parker, Rice & Hawkins, 2000; Perrin, Boyett & McDermott, 2000).

The need to identify such a link had become evident to the Interprofessional Workgroup for Health Professions Regulation (IWHPR). IWHPR is composed of national organizations that work to meet the needs of regulatory bodies all over the United States and its territories. The organizations serve regulatory bodies in (among others) chiropractic, medical technology, nursing, occupational therapy, optometry, physical therapy, physician assistance, respiratory therapy and the speech-hearing-language professions. The group has focused its energies on the problem of assessing the continued competence of health care professionals. After careful study of the problem, it became evident that research into the link (or lack thereof) between mandatory continuing education and the development of professional abilities was necessary. In December of 2000, the NCSBN Research Department took to the IWHPR a proposal for a research study addressing those issues.

Five organizations within the IWHPR along with the NCSBN Board of Directors collaborated in the study. Representatives from the organizations worked together to refine and review the research tool for content validation. The study was conducted by NCSBN May through August of 2002.

Research Design and Methodology

Assumptions

The study was based on two sets of assumptions. The first was that all health care professionals must possess certain categories of abilities in order to provide safe, effective care and services. It was assumed that all health care professionals must be able to perform the following 10 professional abilities:

1. Collect correct information in a timely manner.
2. Identify clients' current needs.
3. Identify clients' future needs.
4. Work effectively within a health care team.
5. Perform procedures common to their professional practice.
6. Recognize situations in which intervention is needed to improve outcomes or prevent harm.
7. Assess client or service outcomes (e.g., responses to treatment, satisfaction with services, etc.).
8. Recognize when their own abilities are inadequate to manage the situation at hand (recognition of the limitation of one's own knowledge and skills).
9. Recognize areas of their own practice in need of improvement.
10. Record a clear, understandable and legally defensible account of care or services provided.

The second assumption concerned the various factors contributing to the development of professional abilities. It was assumed that the following factors contribute to the development of the abilities listed within the first assumption:

- Basic professional education.
- Professional work experience.
- Continuing education (including in-service education, continuing education offerings, short professional courses and formal academic coursework whether leading to a higher degree recognized by the profession or not).
- Informal education from mentors, preceptors or other people who work with the professional and give advice or information.
- Self-study (referral to reference books, texts, drug references, journal articles, etc.).
- Other – anything else that may have had a part to play in building professional abilities.

Questionnaire

A questionnaire, which contained three sections with an optional profession-specific data page, was created specifically for this project. The first section of the questionnaire included questions related to the 10 professional abilities identified within the first research assumption. Three questions were asked about each of these abilities. The first question asked respondents to estimate their abilities at the beginning of their first professional position. The second question asked respondents to estimate their current abilities. Those estimates were provided utilizing a 0 to 100

scale with 0 equaling no ability and 100 equaling full ability 100% of the time. The third question asked respondents to estimate the amount of contribution of six factors (basic professional education, professional work experience, continuing education, mentors or preceptors, self-study and other) to the development of their current abilities. The respondents distributed 10 points among the six factors according to their perceptions of the factors' contributions to their current abilities.

The second section contained questions related to the numbers and types of continuing education hours accumulated by the professional within the past year. The types of continuing education included total hours on all topics, hours on topics directly related to current work, hours on topics attended to prepare for a new position or duties not related to current work, and hours on topics of courses attended only to fulfill continuing education mandates (topics unrelated to current or future work).

The third section contained a number of demographic and other questions. One set of questions ascertained information about each respondent's work setting and profession. Those questions included information related to the provision of continuing education classes, mentors or preceptors and informational resources by employers. Another set collected information about formal credit hours attained after the initial professional program, length of time since initial licensure or certification and time in current position. One question ascertained the number of professional organizations to which the respondent belonged. Two questions elicited data about the continuing education mandates governing the professional's practice including the number of mandated hours. Two questions gathered information about the sources and types of continuing education utilized. A final set of questions asked about the frequency with which certain difficulties were encountered in the pursuit of continuing education offerings. At the end of the questionnaire, the respondent was given an opportunity to record comments.

The survey was reviewed for content validity by experienced professional nurses. A pilot test of the survey revealed a reliability coefficient of .87 for the first section.

Research Questions

1. What is the relationship between mandated continuing education and self-perception of professional abilities?
2. Do continuing education mandates influence the number and type of continuing education offerings attended?
3. What is the relationship of continuing education to the attainment of professional abilities?
4. What professional abilities are most influenced by continuing education?
5. To what degree do initial professional education, professional work experience, continuing education, professional mentors or preceptors and self-study contribute to the attainment of professional abilities?
6. What is the relationship between years of practice and self-perception of professional abilities?

7. What is the relationship between the number of continuing education offerings attended and the number of professional organizations to which the respondent belongs?
8. To what extent do professionals have access to mentors or preceptors, continuing education classes and sources of current health care information within their day-to-day working environments?
9. What are the relationships among access to mentors or preceptors, continuing education classes, and sources of current health care information and attainment of professional abilities?

Sample Selection

Random samples of 2,000 RNs and 2,000 LPN/VNs were selected from lists of actively licensed nurses in 35 United States jurisdictions. A power analysis revealed the need for as few as 85 subjects per group (mandated and nonmandated) to test for a difference in group means of +/- .15 at p = .05. A return rate as low as 10-15% from these random samples was anticipated to provide adequate group samples for the proposed statistical analyses.

Confidentiality

All potential participants were promised confidentiality with regard to their participation and their responses. Pre-assigned code numbers were used to facilitate cost effective follow-up mailings but those numbers were not used to identify individual participants in any other way. Files containing mailing information were kept separate from the data files. The study protocol was reviewed by the NCSBN executive director for compliance with organizational guidelines for research studies involving human subjects.

Survey Process

A four-stage mailing procedure was used to engage subjects in the study. A preletter announcing the research project and the imminent arrival of a survey was sent, followed by the survey with cover letter and return envelope. A reminder postcard was sent one to two weeks after the survey mailing. A second survey was mailed to nonrespondents approximately six weeks after the initial survey mailing.

Return Rates

There were a total of 305 questionnaires sent to bad addresses (158 LPN/VNs and 147 RNs), and a total of 1,025 questionnaires were returned (478 from LPN/VNs and 547 from RNs) for an overall 27.7% return rate, and a return rate of 26% for LPN/VNs and 30% for RNs.

Summary

This research project was created to provide information about the relationship of continuing education to the growth of professional abilities. The study included professionals from six health care professions including nursing. Random samples of RNs and LPN/VNs received surveys developed specifically for the project. Return rates of 26% for LPN/VNs and 30% for RNs were adequate to provide statistical power for data analysis.

Report of Results

Description of Sample

The RNs answering the survey had been in practice an average of 16.7 years (SD 11.7 years) and in their current positions an average of 6.4 years (SD 6.8 years). The LPN/VNs reported practicing for an average of 16.9 years (SD 11.1 years) and in their current positions an average of 8.9 years (SD 9.3 years).

The majority of the RNs reported working in hospitals (53%) with 7% working in long-term care, 7% in home health and 5% in the office setting. The majority of the LPN/VNs reported working in long-term care (31%), hospitals (27%), office settings (15%) and home health settings (6%). See Table 1 for a listing of RN and LPN/VN work settings.

Most of the RN (60%) and LPN/VN (78%) respondents reported holding staff nurse, office nurse or clinic nurse positions. Six percent of the RN respondents reported holding advanced practice nurse positions and 10% reported being managers. Managerial positions were held by 3% of the LPN/VN respondents. Most of the respondents reported providing direct care to clients within their nursing practices (85% of RNs and 95% of LPN/VNs). See Table 2 for a listing of RN and LPN/VN positions.

Of the RN subjects, 86 (17%) reported diploma basic education, 175 (35%) reported associate degree education and 185 (37%) reported baccalaureate education. Four percent of RN respondents were educated outside the U.S.

Table 1. Respondent Work Settings

	RN		LPN/VN	
	%	n	%	n
Hospital or other acute care setting	53	289	27	115
Ambulatory surgical setting	2	13	1	4
Office (physician, dentist, optometrist, chiropractic)	5	25	15	62
Clinic (outpatient care settings)	4	20	3	14
Long-term care	7	38	31	128
Home health	7	37	6	24
Public health (other than home visits)	1	6	1	6
School-based practice	4	20	1	5
Education – faculty of school or college	3	16	0.2	1
Health care regulation	2	8	0.2	1
Industrial setting	1	6	0.7	3
Other	9	50	9	36
Currently unemployed	2	13	5	21

Table 2. Respondent Nursing Positions

	RN		LPN/VN	
	%	n	%	n
Staff nurse, office nurse or clinic nurse	60	301	78	315
Advanced practice nurse (i.e., nurse practitioner or CNS)	6	28		
Nursing clinical manager/ supervisor	10	50	3	13
Administrator of a health care organization	3	13	0.5	2
Educator of staff	1	6	0.5	2
School of nursing faculty	2	11		
School of nursing administrator	0.2	1		
Health care regulator	1	7	0.2	1
Other	17	84	18	72

The RN and LPN/VN subject groups both had 61% of respondents working in states requiring CE for continued licensure. There were 108, or 10%, who held additional certification in nursing, and 80 of those were also licensed in a state requiring CE for licensure renewal (included in the 61% described above). A variable was created that divided the nurses into those with a mandate (either from the state licensing board or from a certifying body) to accumulate CE and those who were not mandated in any way to collect CE hours. This variable was used in the following analyses.

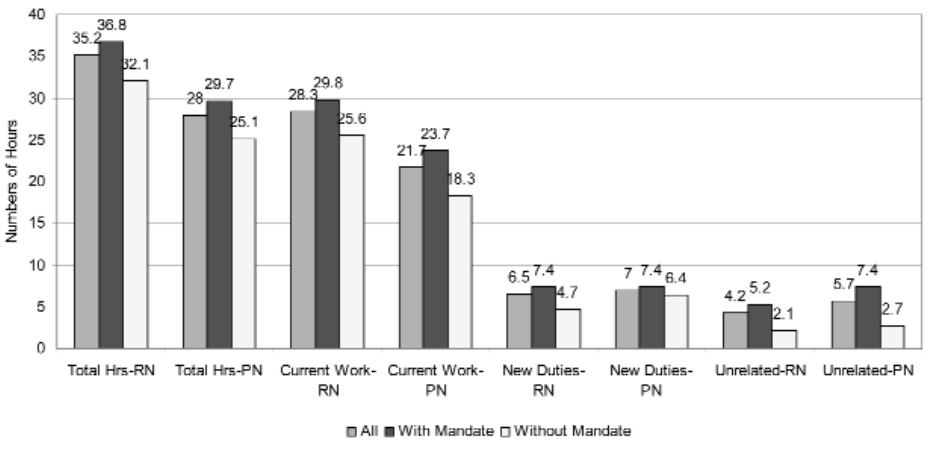
Continuing Education Hours

Survey subjects were asked to record the numbers of hours of CE they had accumulated in the previous 12 months. They were asked to record the total number of hours, the hours they had attended related to their current work, hours they had attended related to future work or new duties, and hours they had attended that were unrelated to their work and not of interest to them (hours they had accumulated only to meet licensure or certification requirements). All categories of CE hours accumulated were explored for outliers (i.e., much larger numbers than would be possible or probable to accumulate in a 12-month period). Approximately 10 outlier data points were removed from the nursing data set. Figure 1 shows the average numbers of hours of CE in the four categories for all RNs and all LPN/VNs, and for RNs and LPN/VNs who did and did not have a CE mandate.

Overall, the RN respondents collected approximately seven more total CE hours and CE hours related to current work than did the LPN/VN respondents. The LPN/VN respondents collected more hours related to preparation for new duties.

The RNs and LPN/VNs who had CE mandates collected more total hours and hours related to current work than did those without CE mandates, but the differences were not statistically significant. Both the RN and LPN/VN respondents with a

Figure 1. Hours of CE Accumulated by RNs and LPN/VNs



CE mandate collected significantly (statistically significant at $p < .05$) more hours of CE unrelated to their current or future work than did those without such a mandate. If the unrelated CE hours are subtracted from the total CE hours for those with and without a CE mandate, the numbers of hours accumulated by those with and without CE mandates become nearly equal. This would indicate that nurses attend approximately the same number of CE hours related to current or future work with or without a mandate to do so.

Beginning and Current Ability Levels

Subjects were asked to estimate their beginning (at the start of their first nursing position) and current abilities in 10 ability categories. Beginning ability estimates for the RN respondents ranged from 30 to 49 and from 30 to 45 for the LPN/VN respondents. Current ability estimates ranged from 78 to 87 for the RNs (see Figure 2) and 75 to 85 for the LPN/VNs (see Figure 3). The RNs and LPN/VNs provided the lowest beginning and current ability estimates for Ability 3 (identifying clients' future needs) and the highest beginning estimates for Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand). The RN respondents provided the highest current ability estimates for Ability 4 (working effectively within a health care team), and the LPN/VN respondents provided the highest current ability estimates for Ability 5 (performing procedures).

Beginning and current ability estimates were compared for those with and without a CE mandate. The only statistically significant difference found was for LPN/VN respondents; the LPN/VN subjects with a CE mandate estimated a higher current level of ability for Ability 7 (assessing client outcomes) than those without a CE mandate.

In order to assess for factors possibly contributing to change in abilities, beginning ability estimates were subtracted from current ability estimates for each subject to make new variables called "growth" for each ability category.

Factors Contributing to Current Ability

Subjects were asked to distribute 10 points among six factors (basic professional education, work experience, CE, mentors or preceptors, self-study, and other) according to the factors' contributions to their current ability in each of the ability categories. Figure 4 shows the average contribution of each of the six factors to current ability in each of the 10 categories for all nurses. On average, the nurse respondents gave the greatest number of points to work experience and the second largest number to basic professional education. A much lower number of points was distributed to mentors or preceptors, CE, self-study and other, in that order. Some variations in point distribution may be noted. For Ability 4 (ability to work within a health care team), subjects apportioned most of the points among work experience, basic professional education and mentors or preceptors. CE, self-study and other each received an average of less than one point. For Abilities 5 (performing procedures) and 10 (documenting care provided)

Ability Categories

1. Collect correct information in a timely manner.
2. Identify clients' current needs.
3. Identify clients' future needs.
4. Work effectively within a health care team.
5. Perform procedures common to their professional practice.
6. Recognize situations in which intervention is needed to improve outcomes or prevent harm.
7. Assess client or service outcomes (e.g., responses to treatment, satisfaction with services, etc.).
8. Recognize when their own abilities are inadequate to manage the situation at hand (recognition of the limitation of one's own knowledge and skills).
9. Recognize areas of their own practice in need of improvement.
10. Record a clear, understandable and legally defensible account of care or services provided.

Figure 2. RN Beginning and Current Ability Levels

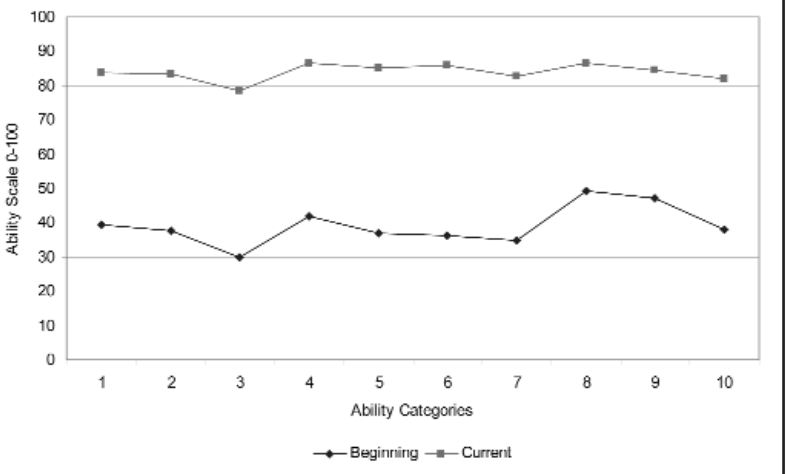


Figure 3. LPN/VN Beginning and Current Ability Levels

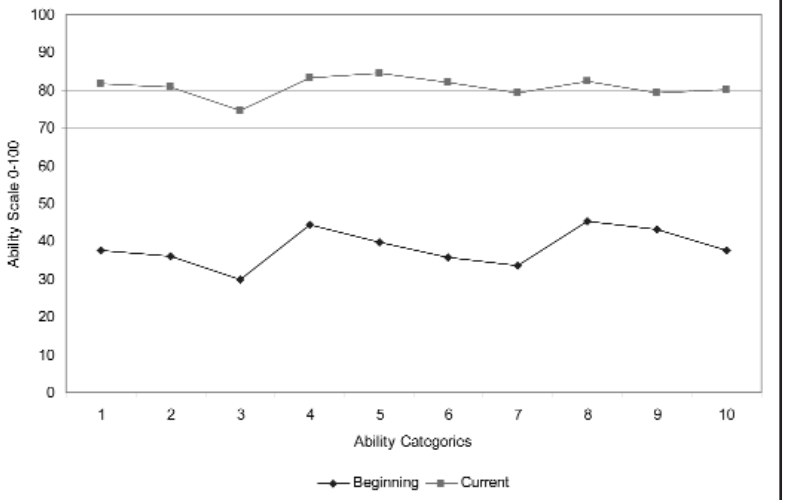
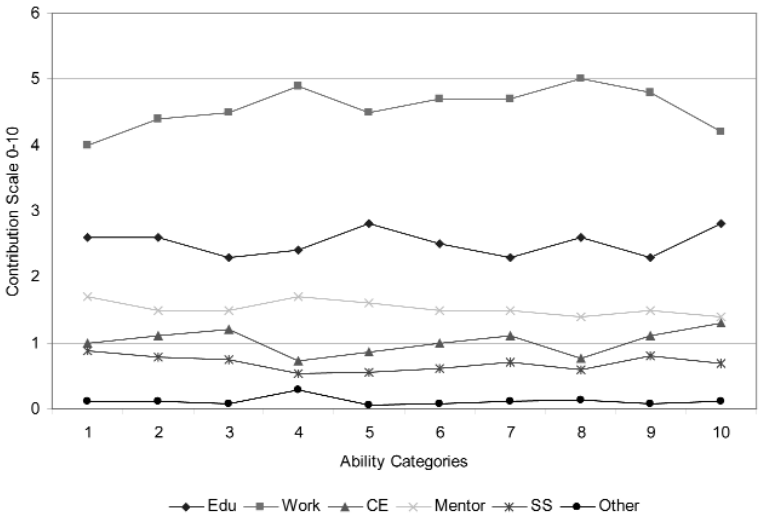


Figure 4. Estimates of Factor Contributions to Current Abilities – All Nurses



subjects appeared to place more value on the contribution of basic professional education than they had in the other ability categories and slightly less on the contribution of work experience.

RN and LPN/VN estimates of the contributions of the factors differed only slightly. The LPN/VN respondents estimated a significantly higher contribution from work experience than did RNs for Abilities 2 (identifying clients' current needs), 6 (recognizing situations in which intervention is needed to improve outcomes or prevent harm), 7 (assessing client outcomes), and 10 (documenting care provided). The RN subjects estimated a significantly higher contribution from CE than did LPN/VNs for Abilities 2 (identifying clients' current needs), and 10 (documenting care provided); and a significantly higher contribution from mentors for Abilities 5 (performing procedures) and 8 (recognizing when your own abilities are inadequate to manage the situation at hand).

The estimates of the contributions of factors were compared for those with and without CE mandates. There were two small, but statistically significant, differences found. The LPN/VN subjects without a CE mandate estimated a slightly higher contribution of basic education for Ability 3 (identifying clients' future needs) than did those with a CE mandate. The RN subjects without a mandate estimated a slightly higher contribution of mentors or preceptors for Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand) than did RNs with a mandate.

Correlations of Growth With Contributing Factors

Growth in each of the 10 ability categories was correlated with the contribution attributed to basic education, work experience, CE,

mentors and preceptors, self-study and other. Nine sets of correlations were run:

- All nurse subjects
- Nurses with a CE mandate
- Nurses without a CE mandate
- All RNs
- RNs with a CE mandate
- RNs without a CE mandate
- All LPN/VNs
- LPN/VNs with a CE mandate
- LPN/VNs without a CE mandate

Results for the RN data demonstrated several consistent findings across all 10 ability categories. There was a moderate negative correlation of growth with initial professional education for RN subjects with and without a CE mandate. This indicated that the more the RNs had grown, the less they attributed that growth to their initial professional education. There was also a small to moderate positive correlation of growth with work experience for RNs with and without a CE mandate, meaning that the more the RNs had grown, the more they attributed that growth to their work experience.

The data from the RNs with a CE mandate demonstrated some small to moderate correlations with several other factors. There were small to moderate positive correlations of growth with the contribution of mentors or preceptors for three ability categories. The strongest of those correlations was for Ability 5 (performing procedures), and smaller significant correlations were found for Abilities 2 (identifying clients' current needs) and 8 (recognizing when your own abilities are inadequate to manage the situation at hand). There was a small to moderate negative correlation of "other" with growth (the more contribution the subject had estimated from other factors, the less the subject had grown) for Ability 4 (working within a health care team). There was only one small positive correlation of growth with CE and that was for Ability 10 (documenting care provided).

The LPN/VN correlations also demonstrated the negative correlations of growth with initial education for nine of the 10 ability categories. The relationship was not present for either LPN/VNs with or without a CE mandate for Ability 3 (identifying clients' future needs). A positive correlation of growth with work experience was found for LPN/VNs with and without a CE mandate for seven of the 10 ability categories. The correlation with work experience was not found for either those with or without a CE mandate for Ability 2 (identifying clients' current needs), and was not found for LPN/VNs with a CE mandate for Ability 1 (collecting correct information in a timely manner) or Ability 4 (working within a health care team).

There were several other significant correlations of growth with contributing factors for LPN/VN subjects. There were small to moderate negative correlations of growth with self-study for LPN/VNs with a CE mandate for Ability 4 (working effectively within a health care team), and for LPN/VNs without a CE mandate for Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand). There was a small to moderate negative correlation of growth with the contribution of mentors or preceptors for LPN/VNs without a CE mandate for Ability

7 (assessing client or service outcomes); and a positive correlation of growth with the contribution of CE for LPN/VNs without a mandate for Ability 1 (collecting correct information in a timely manner). See Table 3 for a listing of RN and LPN/VN correlations.

Comparisons of Growth Between Nurses With and Without CE Mandates

Growth in each of the 10 ability categories was compared for nurses with and without a CE mandate. ANCOVA analyses were performed on the data from all nurses, data from RNs and data from LPN/VNs. Total CE hours, years in current position, years in practice, credit hours and beginning ability estimates were used as covariates. No significant or practically relevant differences were found in the amount of growth experienced by nurses (all nurses, RNs, or LPN/VNs) with and without CE mandates.

Issues Influencing Growth in Abilities

A number of questions on the survey addressed various work setting and continuing education issues that might influence growth in abilities. Many of these issues were directly or indirectly related to the nurses' delivery of safe and effective care. There were some differences seen in these issues for those nurses with and without CE mandates (see Table 4).

One important issue was access to CE. Only 78% of the RN and 65% of the LPN/VN respondents reported that their employers provided continuing education adequate for their professional needs. The provision of CE varied by type of nurse and by type of employment setting. In hospitals, 87% of RNs and 86% of LPN/VNs reported receiving CE from their employers; however, 71% of RNs and only 48% of LPN/VNs working in long-term care reported receiving CE from their employers.

When asked about barriers to participation in CE, 43% of the RNs and 45% of the LPN/VNs reported that they sometimes or frequently were not allowed time off for continuing education. This was a problem for a greater percentage of RNs working in hospitals and for LPN/VNs working in long-term care.

RNs with a CE mandate were more likely to report getting CE from professional organizations/conferences (75% with a mandate and 66% without), and from academic institutions (43% with a mandate and 27% without). Both RN and LPN/VN respondents with a CE mandate were more likely to report receiving CE from CE vendors than were those without a mandate (RN – 69% with and 47% without; LPN/VN – 63% with and 29% without). Those nurses with a CE mandate were more likely to take correspondence classes to earn CE (RN – 30% with and 10% without; LPN/VN – 42% with and 11% without). Only 25% of the RN respondents and 12% of the LPN/VN subjects reported using the Internet for CE.

Another issue of importance to respondence nurses was the reimbursement of expenses for professional development. About 60% of the RN respondents and 50% of

Table 3. Correlations of Growth with Contributing Factors

RNs

	Basic Educ.			Work Exper.			CE			Mentors			Self-Study			Other		
	All	W	W/O	All	W	W/O	All	W	W/O	All	W	W/O	All	W	W/O	All	W	W/O
1	-0.28	-0.24	-0.41	0.19	0.18	0.34	0.02	-0.07	0.04	0.06	0.09	0.09	0.04	-0.01	0.08	-0.11	-0.07	-0.2
2	-0.36	-0.35	-0.41	0.18	0.17	0.24	0.03	0.01	0.07	0.14	0.17	0.06	0.06	0.05	0.01	0.03	0.06	-0.07
3	-0.38	-0.33	-0.47	0.29	0.24	0.39	0.04	0.03	-0.04	-0.03	-0.02	-0.04	-0.01	-0.04	0.01	-0.03	-0.03	0
4	-0.26	-0.22	-0.35	0.3	0.24	0.37	0.05	0.05	0.05	-0.03	-0.01	-0.02	-0.14	-0.14	-0.14	-0.18	-0.24	0.05
5	-0.47	-0.45	-0.52	0.19	0.18	0.26	-0.01	0.02	-0.08	0.24	0.28	0.17	0.03	-0.03	-0.06	-0.03	-0.03	*
6	-0.45	-0.45	-0.43	0.32	0.3	0.36	0.03	0.03	0	0.01	0.03	-0.05	-0.01	-0.01	-0.04	-0.02	0	-0.07
7	-0.36	-0.4	-0.33	0.29	0.31	0.26	0.07	0.05	0.09	0.01	0.03	-0.01	-0.08	-0.07	-0.08	-0.17	-0.11	-0.24
8	-0.38	-0.36	-0.42	0.24	0.23	0.24	0.04	0.02	0.1	0.07	0.14	-0.01	-0.05	-0.07	0.05	0.1	0.17	-0.1
9	-0.28	-0.28	-0.32	0.21	0.15	0.36	0	0.02	-0.04	-0.05	0.07	-0.14	-0.09	-0.03	-0.18	-0.15	0.17	0.1
10	-0.42	-0.4	-0.5	0.26	0.24	0.31	0.1	0.15	0.06	0.12	0.12	0.09	-0.01	-0.04	0.06	-0.11	-0.13	-0.12

LPN/VNs

	Basic Educ.			Work Exper.			CE			Mentors			Self-Study			Other		
	All	W	W/O	All	W	W/O	All	W	W/O	All	W	W/O	All	W	W/O	All	W	W/O
1	-0.27	-0.19	-0.36	0.13	0.01	0.18	0.07	0.02	0.31	0.05	0.09	-0.14	0.06	0.13	0.07	-0.11	-0.08	-0.03
2	-0.21	-0.23	-0.12	0.12	0.08	0.06	0.08	0.09	0.1	0.03	0.1	-0.02	0.01	0.02	0.02	0	0.07	-0.12
3	-0.1	-0.12	0	0.22	0.16	0.24	-0.03	0.05	-0.12	-0.03	0.02	-0.05	-0.07	0.02	-0.15	0.07	0.18	-0.24
4	-0.28	-0.19	-0.34	0.12	0.09	0.15	0.02	-0.05	0.09	0.12	0.1	0.09	-0.1	-0.27	0.04	-0.16	0.03	-0.06
5	-0.33	-0.35	-0.4	0.22	0.19	0.32	0.06	0.06	0.03	0.08	0.05	0.1	0.01	0.07	0.04	-0.16	0.06	-0.19
6	-0.41	-0.46	-0.43	0.24	0.26	0.18	0	-0.02	0.09	0.11	0.09	0.14	-0.02	0.03	-0.12	-0.07	-0.12	-0.09
7	-0.33	-0.38	-0.32	0.3	0.3	0.33	0	-0.03	0.06	-0.03	0.08	-0.27	-0.12	-0.09	-0.14	-0.08	-0.12	-0.06
8	-0.32	-0.33	-0.34	0.36	0.38	0.36	-0.06	-0.15	0.05	-0.08	-0.03	-0.08	-0.18	-0.11	-0.27	-0.1	-0.18	-0.13
9	-0.25	-0.18	-0.33	0.17	0.15	0.17	0	-0.03	0.08	0.02	0	-0.02	-0.01	0.01	-0.01	-0.05	-0.04	*
10	-0.37	-0.26	-0.48	0.18	0.11	0.19	0.06	0	0.15	0.03	0.01	0.03	-0.02	-0.03	-0.01	-0.04	0.01	-0.15

All = All nurses in category W = With CE Mandate W/O = Without CE Mandate

the LPN/VNs reported being reimbursed for one or more aspects of professional development.

Experienced, professional assistance within the health care setting may play a major role in professional development and the delivery of safe care. While approximately half the nurse respondents to this study reported that their employing institutions had a formal mentoring program, most of them reported that these programs were only for new employees. About 75% of RNs and LPN/VNs working in hospitals reported having access to staff development personnel, but only 40-50% of those working in nursing homes reported the same. When asked about the availability of experienced professionals to answer questions, 69% of the RNs and 75% of the LPN/VNs reported having access to such people most or all of the time, and 25% of the RNs and 21% of the LPN/VNs reported having such individuals available at least some of the time.

Comparison of Growth in Abilities Across Work Setting Population Densities

Survey respondents were asked to identify the population of their geographic area of employment. Growth in all 10 ability categories was compared across five categories of population density.

Combined nursing data for RNs and LPN/VNs demonstrated statistically significant differences for five of the 10 ability categories: Ability 3 (identifying clients' future needs); Ability 6 (recognizing situations in which intervention is needed to improve outcomes or prevent harm); Ability 7 (assessing client outcomes); Ability 8 (recognizing when your own abilities are inadequate to manage the situation at hand); and Ability 10 (documenting care provided).

Figures 3 through 7 illustrate the differences found in growth across areas of population density.

Summary

The RNs and LPN/VNs participating in the study reported an average of about 17 years of practice experience. The RN respondents collected more overall hours of CE than did the LPN/VNs; however, for both groups of nurses, those mandated to collect CE did not accumulate significantly more total hours of CE than did those without such a mandate. Those nurses with a mandate also did not report any greater growth in abilities than did those without a mandate. Respondents to the study rated the contributions of work experience, initial professional education and mentors above the contribution of CE in assisting them to their current levels of ability. Further, it was found that nurses working in different settings had differing access to CE and other factors contributing to the attainment of professional abilities, and that CE mandates influenced the sources and types of CE attended. Significant differences were also found in the growth in abilities of those working in different population areas.

Table 4. Comparison of Modifying Factors for RNs and LPN/VNs With and Without CE Mandates

	RNs			LPN/VNs		
Variable	**All (%)**	**W Mand. (%)**	**W/O Mand. (%)**	**All (%)**	**W Mand. (%)**	**W/O Mand. (%)**
Years in practice*^	16.7	18	14.8	16.9	16.2	19.4
Years in current position^	6.4	6.9	5.8	9	8.3	10.8
Credit hours earned*	57	70	33.5	54	60.9	52.2
Number of clients	13	14	13	23	21	26
Does employer offer CE pertinent to professional needs?**	78	77	78	65	67	63
Does employer-offered CE adequately meet CE needs?^						
Yes, definitely	38	37	38	34	41	24
Yes, somewhat	52	50	56	58	52	66
No	11	13	7	8	7	10
Does your facility provide a formal mentoring program for employees of your professional type?**	57	56	56	42	43	41
Is the mentoring program only for new employees?**	76	76	76	65	65	70
Does your facility employ individuals to perform staff development?**	63	61	62	59	60	56
Are staff development employees available to you?						
Yes, most or all of the time	45	45	46	53	58	43
At least some of the time	40	39	40	37	34	42
No	15	16	15	10	9	15
Are there experienced professionals available to answer questions?						
Yes, most or all of the time	69	69	69	75	74	78
At least some of the time	25	26	25	21	23	18
No	0.4	0.3	0.6	1	1	0.7
I am the only professional of my type at employing facility	5	5	6	3	2	4
Are there adequate reference materials available to you?**	76	76	73	76	74	81
Are you reimbursed for professional development expenses?						
Not reimbursed for following items:	40	40	41	50	50	51
Reference books	14	15	12	9	9	9
Professional journals	8	9	5	6	7	5
Professional assoc. memberships*	11	12	7	6	7	4
CE outside workplace	48	48	49	41	42	39
Adv. prac. or specialist certification*	20	22	16	11	12	9
Does reimbursement cover your expenses?						
Yes, most or all	22	21	25	20	22	19
At least partially	31	32	31	21	22	25
No	13	15	11	11	11	10
Not reimbursed for listed items	34	33	33	48	45	46

*Significantly different for RNs with and without CE mandate, $p < .05$.
^Significantly different for LPN/VNs with and without CE mandate, $p < .05$.
** Numbers represent percent who answered "yes" to the given question.

Table 4, continued

Variable	RNs			LPN/VNs		
	All (%)	W Mand. (%)	W/O Mand. (%)	All (%)	W Mand. (%)	W/O Mand. (%)
To how many professional organizations do you belong?*						
None	47	40	56	74	71	81
One	30	31	31	17	20	12
Two	14	19	8	7	8	5
Three	6	7	2	0.9	0.9	1
Four	2	3	1	0.5	0.4	0.7
Five	0.6	0.6	0.6	0.2		
Which of the following sources of CE have you used?						
Place of employment*	79	76	85	67	66	70
Professional org/conferences*	72	75	66	48	48	47
Continuing education vendors*^	62	69	47	50	63	29
Pharmacy/diag. industry reps	33	32	36	27	26	28
Academic institution*	38	43	27	25	27	22
Which of the following methods of CE provision have you used?						
Live	93	93	92	79	80	77
Internet-based	25	26	23	12	10	15
Non-Internet computer-based	10	10	11	4	3	5
Audio*^	19	16	23	14	10	19
Video^	37	36	40	30	24	39
Journals/books	58	59	56	47	48	46
Correspondence classes^	24	30	10	30	42	11
To what degree have you experienced any of the following difficulties with CE? (the values given are the sum of the percentages of "sometimes" and "frequently" answers).						
Too few pertinent offerings*^	54	48	67	55	53	59
Offerings are too expensive	82	82	84	78	77	82
Must belong to prof. org. to be informed^	41	39	45	40	35	48
Must travel over 50 miles^	70	67	75	62	57	73
Must pay for overnight lodging^	59	59	61	55	52	64
Employer unwilling to allow time off^	43	40	46	45	40	58
Which of the following best describes the population of the geographic area where you are employed?*						
Less than 20,000	19	18	22	30	27	35
20,000 to 49,999	18	22	10	20	21	19
50,000 to 99,999	18	13	28	15	15	17
100,000 to 500,000	20	21	16	13	15	10
Greater than 500,000	18	19	16	8	9	8
Don't know	8	7	8	14	14	11

*Significantly different for RNs with and without CE mandate, $p < .05$.
^Significantly different for LPN/VNs with and without CE mandate, $p < .05$.
** Numbers represent percent who answered "yes" to the given question.

Ability Categories

1. Collect correct information in a timely manner.
2. Identify clients' current needs.
3. Identify clients' future needs.
4. Work effectively within a health care team.
5. Perform procedures common to their professional practice.
6. Recognize situations in which intervention is needed to improve outcomes or prevent harm.
7. Assess client or service outcomes (e.g., responses to treatment, satisfaction with services, etc.).
8. Recognize when their own abilities are inadequate to manage the situation at hand (recognition of the limitation of one's own knowledge and skills).
9. Recognize areas of their own practice in need of improvement.
10. Record a clear, understandable and legally defensible account of care or services provided.

Population Areas

Area 1 = < 20,000
Area 2 = 20,000-49,999
Area 3 = 50,000-99,999
Area 4 = 100,000-500,000
Area 5 = > 500,000

Figure 5. Growth in Ability 3 by Population of Work Setting

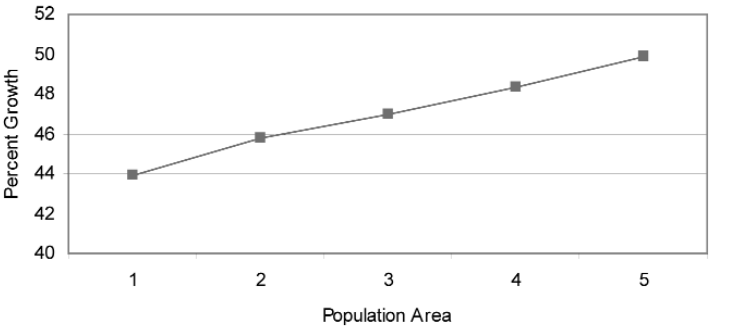


Figure 6. Growth in Ability 6 by Population of Work Setting

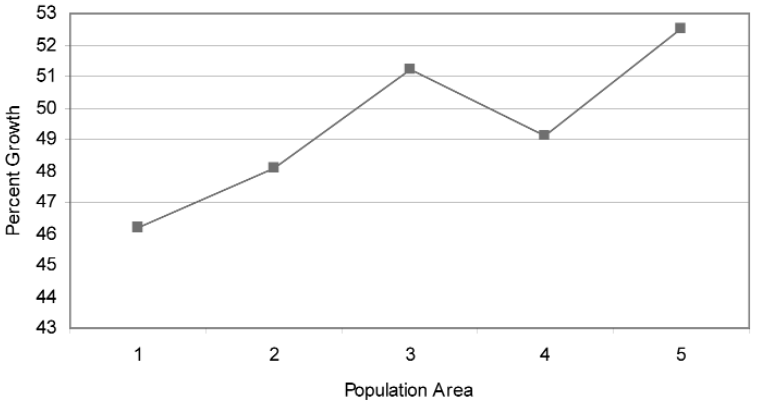


Figure 7. Growth in Ability 7 by Population of Work Setting

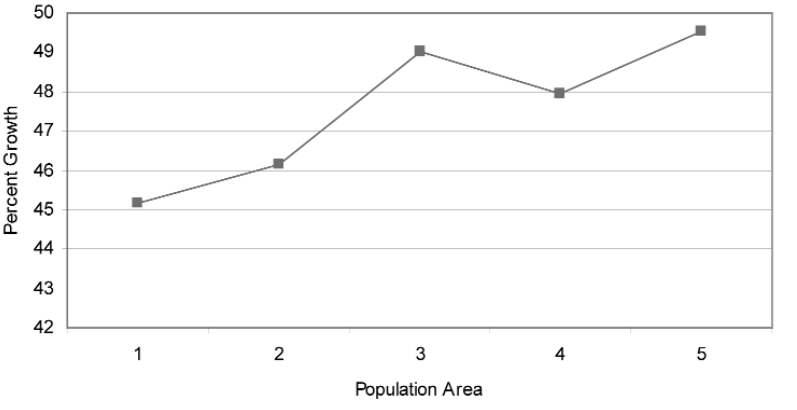


Figure 8. Growth in Ability 8 by Population of Work Setting

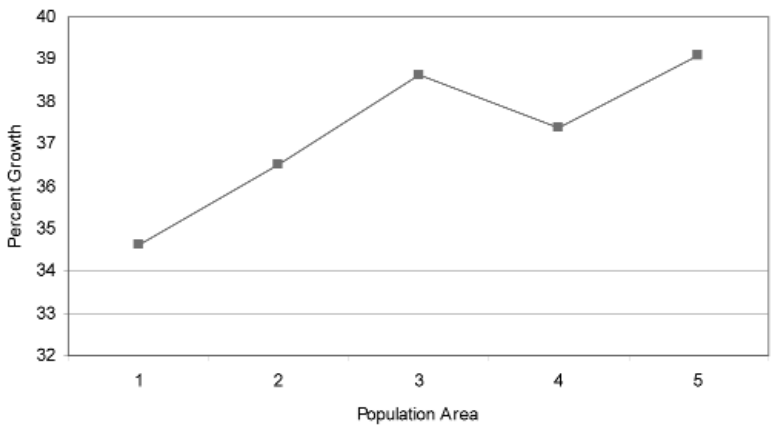
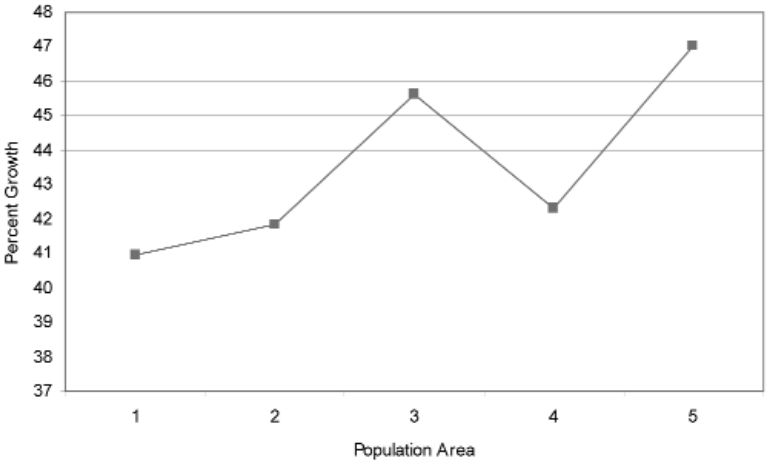


Figure 9. Growth in Ability 10 by Population of Work Setting



Conclusions

1. Nurses tend to accumulate CE hours whether or not they are mandated to do so.
2. Nurses with a CE mandate attend more hours of CE unrelated to their work or interests.
3. Nurses consider work experience as the greatest contributor to their current levels of ability.
4. Nurses with and without CE mandates estimate the same levels of growth in 10 professional abilities.
5. Access to CE and other factors related to professional learning varies among nurses in different work settings and possibly among nurses in different population settings.
6. Nurses with CE mandates may have greater access to some sources of CE such as CE vendors because nurses with mandates are targeted by those providers.
7. Nurses in lower population areas experience less growth in some abilities than do those in more populous regions.

References

Hewlett, P. O. & Eichelberger, L. W. (1996). The case against mandatory continuing education. Journal of Continuing Education in Nursing, 27(4), pp. 176-181.

McGuire, C. A., Stanhope, M. & Weisenbeck, S. M. (1998). Nursing competence – an evolving regulatory issue in Kentucky. Nursing Administration Quarterly, 23(1), pp. 24-28.

Perrin, K. M., Boyett, T. P. & McDermott, R. J. (2000). Continuing education about physically abusive relationships: Does education change the perceptions of health care practitioners? The Journal of Continuing Education In Nursing, 31(6), pp. 269-274.

Slusher, I. L., Logsdon, M. C., Johnson, E., Parker, B., Rice, J. & Hawkins, B. (2000). Continuing education in nursing: A 10-year retrospective study of CE offerings presented by the Kentucky Nurses Association. The Journal of Continuing Education in Nursing, 31(5), pp. 219-223.

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