Peer Reviewed Article

ISSN: 2162-3104 Print/ ISSN: 2166-3750 Online
Volume 4, Issue 3 (2014), pp. 236-246

http://jistudents.org/

# Perceptions of Clinical Education Preparedness at a Large Urban US University: Is There a Difference Between US-Born and Non-US Born Students?

*Timmerie Cohen, PhD*
*M. Ferell Justice, MS*
*Melanie C. Dempsey, MS*
Virginia Commonwealth University (USA)

**Abstract**

*This research compared three clinical preparedness domains, communication ability, social comfort, and clinical confidence, between US-born and non-US born radiation sciences students. The aim of the study was to determine if there were perceived differences in clinical preparedness between them. Student's place of birth was found to be an influencing factor in each of the clinical preparedness domains. Informing faculty, clinical instructors, and hospital staff of the perceived differences in clinical education preparedness among non-US born students may serve as a catalyst for instructional change. Educators can then formulate instructional strategies to better prepare non-US born students.*

**Keywords:** Radiation science, international students, clinical education, social comfort, clinical confidence, clinical preparedness

---

Students not born in the United States are an integral part of higher education. Diversity in higher education is not limited to race and gender. Cultural backgrounds are varied and students may not identify with traditional cultures that are defined as White American, African American, or American Indian. It is suggested that such differences are also manifested in their learning behavior or practices. Therefore, it is important to explore the effectiveness of current instructional strategies in regards to students not born in the United States (Yoder, 2001).

Many large universities in the US have both academic and medical campuses with multiple undergraduate programs offered to students. Undergraduate medical programs, such as allied health and nursing, have a practical component. This necessitates working with hospital staff and patients to develop technical skills along with communication and interpersonal skills. International students have an added challenge of carrying out clinical practice in a culturally unfamiliar environment. Their educational needs should be assessed so that faculty and healthcare professionals may successfully integrate these students into a clinical education environment and produce competent healthcare professionals in the process.

This study focuses on radiation sciences. The educational programs in the radiation sciences utilize both didactic and clinical methods. The didactic courses encompass patient care, physics, radiologic procedures, pathology, and other career specific courses. The clinical education is the practical, "hands on," learning component that takes place in the clinical setting and utilizes the staff in the clinical department, patients, equipment, and clinical educators (Papp, Markkanen & von Bondsdorff, 2003). The radiation science students are dependent on clinical education to complete their training. Clinical education experience is paramount for future health care providers (Hall, Keeley, Dojeiji, Byszewski, & Marks, 2004; Papp, et al., 2003; Rogan, Miguel, Brow, & Kilstoff, 2006).

Ensuring initial clinical preparedness for all students is a top priority for all radiologic science educators. Clinical preparedness is defined as "…the ability to develop critical skills, integrate theory with practice, apply problem solving skills, develop interpersonal skills and become socialized into the formal and informal norms, protocols and expectations…" (Papp, et al., 2003). By measuring and comparing perceived clinical preparedness in US-born students and non-US born students the research can provide a useful insight into the clinical education needs of students with different cultural backgrounds.

## Literature Review

The American Medical Association states that there are 65 allied health care occupations and 22 accrediting agencies (*Health Professional and Education Directory, 2013)*. In order to graduate the required number of allied health professionals, there are 6,700 different educational programs on offer in 2,500 institutions (Thrall, 2006). The allied health professions include, but are not limited to: physical and occupation therapy, physicians' assistant, health care administration, dieticians, medical librarians, phlebotomists, rehabilitation counseling, clinical laboratory sciences, and radiation sciences. The disciplines within radiation sciences typically include radiography, radiation therapy, and nuclear medicine. It is important to note that the discipline of radiography includes not only diagnostic radiography but also computed tomography (CT), magnetic resonance imaging (MRI), sonography (ultrasound), intervention radiography, and mammography. The Joint Review Committee on Education in Radiologic Technology (2012) reported 713 accredited radiologic technology programs, which included both radiography and radiation therapy educational programs. The Joint Review Committee on Educational Programs in Nuclear Medicine Technology reported 99 accredited Nuclear Medicine Programs (JRCNMT, 2012).

The need to demonstrate that clinical education preparedness in radiologic science is comparable, without bias or discrimination, across all student populations is research worthy. Studies involving medical and nursing students have reported that it is difficult for student to adjust in the beginning of the clinical education experience, due to its complex and ever changing environment (Andrews, Brodie, Andrews, Hillan, Thomas, Wong et al., 2006; Hall, et al., 2004; Papp, et al., 2003; Rogan, et al., 2006; Seabrook, 2004). The literature reviewed typically generalized the difficulties reported by all students involved in clinical education (Baldwin, Woods & Simmons, 2005). It would be useful to find out if the difficulties among non-US born students were disproportionate to those born in the United States. Previous qualitative studies used interviews and focus groups to identify themes in culturally diverse students' attitudes towards clinical education (Andrews, et al., 2006; Hall, et al., 2004; Papp, et al., 2003; Rogan, et al., 2006; Seabrook, 2004).

Rogan et al. (2006) found that the perceptions of difficulties in clinical education were due not only to language barriers but also to culturally bound concepts that affected interaction and behavior. Cultural issues such as timing and politeness, different learning styles and racism accounted for the perceived clinical difficulties. Using a qualitative approach which used a descriptive interpretive design to study the perceived effects of an intensive language intervention on non-English speaking students who scored poorly on clinical education assessments Rogan et al. found that an intensive language program could help culturally diverse students understand what was expected of them in clinical education settings.

Culturally diverse students were found to have certain training desires and expectations in higher education (Hall, et al., 2004; Seabrook, 2004). Studies have shown that culturally diverse students in clinical medical education, through a needs assessment process, desired increased instruction in the following areas: English language skills (oral and written), a better understanding of Western hospital operation, a better understanding of the function of different professionals within hospitals, opportunities to practice specific skills (such as talking with patients, their families and colleagues), increased support for International Medical School graduates, and faculty and staff education on the cultural challenges faced by International Medical School graduates (Hall, et al., 2004; Rodger, Webb, Devitt, Gilbert, Wrightson, & McMeeken, 2007; Seabrook, 2004; Yoder, 2001). The perceived needs of culturally diverse medical students may provide insight into ways in which education can be expanded.

Taking into account the unpredictable and ever changing climate of clinical education settings, the problems encountered by culturally diverse students in higher education can lead to common topics of interest. Studies have shown that social situations encountered by culturally diverse students affected their perceived success in education. These social situations include acceptance by peers, confidence in English language skills, participation in question and answer sessions with peers and educators, and overcoming social difficulties (Fan & Mak, 1998; Lee & Rice, 2007). Lee and Rice (2007) found that cultural racism exists in the university setting among students, faculty, and administration. They also reported that culturally diverse students have unsettled feelings of discomfort and inhospitality after their arrival to the university, although they may be unable to articulate the source of their discomfort. The authors acknowledged that their findings may be biased due to only "disgruntled" students agreeing to be interviewed while satisfied culturally diverse students may have decided not to participate (Lee & Rice, 2007).

Self-efficacy is the belief that one can successfully carry out a behavior to produce a particular outcome (Bandura, 1999). The issue of self-efficacy is important in clinical education. In the search for a quantitative measurement tool of self-efficacy in multicultural university students, Fan and Mak (1998) developed a tool to measure self-efficacy in diverse student populations. The tool measures social efficacy including educator interactions, comfort level with language skills, group interactions and expressing opinions. The authors developed a social self-efficacy survey tool which was tested for reliability and demonstrated there were differences between Australian born students and non-English speaking immigrants (Fan & Mak, 1998). The differences were that immigrant students had a decreased level of social confidence and an overall lower sense of self-efficacy. This study provided a reliable measurement tool, using a 7 point Likert scale, but did not elaborate on the significance of the findings since the goal was to construct a reliable measurement tool (Fan & Mak, 1998). It is important to note that this measurement tool was not specifically constructed for students engaged in clinical education.

There is no research into the perceived level of clinical preparedness for radiation sciences students in a culturally diverse population. Several qualitative studies have developed common themes regarding the lack of social acceptance and difficulties in educator interactions with a culturally diverse student population in higher education (Papp, et al., 2003; Hall, et al., 2004; Lee & Rice, 2007; Seabrook, 2004). Research on clinical preparedness was found to be quite limited, with no previous studies found comparing US born and non-US born students in the radiation sciences (Papp, et al., 2003; Hall, et al., 2004; Seabrook, 2004). Using a culturally rich university setting, which includes a radiologic sciences program, can be an appropriate testing ground for measuring differences in perceived student preparedness in clinical education. Assessing student preparedness in all students, including non-US born students can reveal potential learning barriers and give educators insight into what changes are needed in clinical instruction.

## Methods

A non-experimental causal comparative design was used for this pilot study. This quantitative design compared the perceived levels of communication ability, social comfort, and clinical confidence between students born in the United States and those who were not born in the country. The operational definition for non-US born students was students who reported that they were not born in the United States, regardless of citizenship.

This design was chosen since a census survey could be used for the entire population of interest, which were those students who completed their first semester of clinical education in a radiologic sciences program at a large urban university. The limitation of this design is that the two groups being compared may have different numbers of participants, due to annual enrollment variability. Enrollment in the radiation science program is approximately 30 to 36 students per year. Conducting this pilot study for three years allowed for an increased sample size. Surveys were administered during class time in a paper format. The students were advised that the survey was completely voluntary and their answers would be anonymous. The surveys were distributed to students by non-research faculty to minimize experimenter effects. The study was approved by the University's Institutional Review Board.

### Research Question

After the first semester of clinical education, are there perceived differences in clinical education preparedness between students who were born in the United States and those who were not?

### Null Hypothesis

There is no difference of perceived clinical education preparedness between US born and non-US born radiation sciences students.

### Population

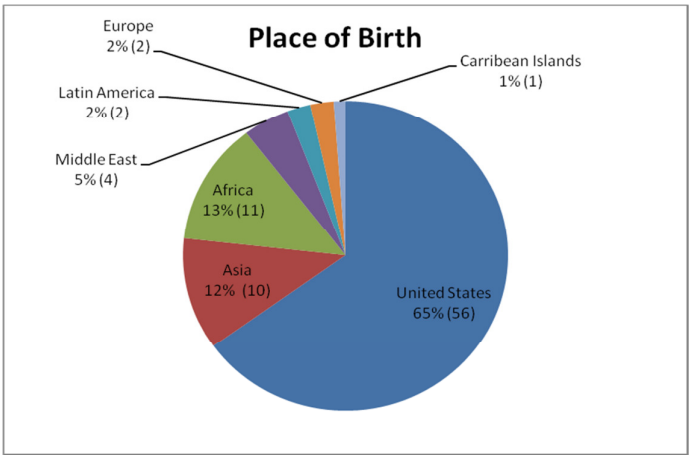
A census survey was conducted to capture the population of interest which included all entry level radiography, radiation therapy, and nuclear medicine students completing their first semester of clinical education from 2009 to 2011 at a large urban university in the US. The radiologic science curricula included one semester of introductory or preparatory courses for radiographers prior to the initiation of clinical education and two semesters of similar courses for nuclear medicine and

radiation therapy students. Any student in the cohort that was absent or chose not to participate was excluded from the study. The only students purposefully excluded from this study were those with previous clinical experience, such as radiographers returning to pursue training in radiation therapy. The demographics of this population varied greatly by age, race, gender, ethnicity, and parental place of birth. The age range of the students in this pilot study was 19-52 years old; the mean age was 24, with 73% of students between the ages of 19-24 years old, 18.7% of students between the ages of 25-29 years old, 4.7% between 30-39 years old, and 3.6% between the ages of 40-52 years old. Sixty-six students were female and 20 were male, with 21 female (32%) and 9 male (45%) students born outside the United States. Table 1 provides demographic statistics and Figure 1 provides place of birth for the 86 students included in the survey.

Table 1
*Demographic Characteristics of Participants*

| Variables | Category | N (Valid %) |
|---|---|---|
| Age (Years) | 19-24 | 63 (73%) |
| | 25-29 | 16 (18.7%) |
| | 30-39 | 4 (4.7%) |
| | 40-52 | 3 (3.6%) |
| Gender | Female | 66 (76.7%) |
| | Male | 20 (23.3%) |
| Born in the US | Female | 45 (52.3%) |
| | Male | 11 (12.8%) |
| Born outside the US | Female | 21 (24.4%) |
| | Male | 9 (10.5%) |
| Females born outside the US; years in the US | 2-4 | 8 (9%) |
| | 5-10 | 9 (10.4%) |
| | 21-36 | 4 (5%) |
| Males born outside the US; years in the US | 2-4 | 6 (7%) |
| | 5-10 | 2 (2.3%) |
| | 21-36 | 1 (1.2%) |

Figure 1
*Student Place of Birth*



**Instrument**

Using a 7 point Likert scale, the study surveyed twenty-four items. The Likert scale ranged from 1-strongly agree to 7-strongly disagree. The quantitative measurement tool developed by Fan and Mak (1998) which measured self-efficacy served as a guide for the development of this survey, but was not used for comparison. Demographic information gathered in the survey included age, race, gender, place of birth, ethnic origin, and years living in the United States. The survey questions dealt with perceived clinical education preparedness, which included communication, social comfort, and clinical confidence.

The independent variable was the students' place of birth. The dependent variable was the perceived level of clinical preparedness of students. Clinical preparedness includes: the perception as a valued member of the hospital team, ability to perform basic tasks (such as patient transfer, patient transport, and basic radiologic science procedures (i.e. chest radiographs, bone scans, or single field radiation oncology treatment depending on educational modality), and perception of open communication with clinical questions from faculty and hospital staff.

The survey was conducted at the end of the first semester of clinical experience and prior to the posting of semester grades. The strategy was to minimize negative or positive grade influences on survey responses. The survey was given to students in each modality (radiography, radiation therapy, and nuclear medicine) during the same time period to prevent discussion regarding the survey. The process was repeated annually for three years (2009-2011).

**Data Analysis**

SPSS version 19 statistical software was used to analyze the data. A *t*-test was employed to analyze the difference in the means between students born in the United States and non-US born students. The *p*- value, significance level, was set at .05. Means were tested for each of the 24 survey questions.

## Results

Of the 93 students who were eligible to participate in the survey, 86 completed the survey. There was statistical significance confirmed in 14 out 24 survey questions when the means of the students born in the United States were compared to the means of those not born in the United States. The survey questions were categorized into three domains: communication, social comfort, and clinical confidence. The survey questions, means, and *t*-test results are presented in Table 2.

Differences in perceived levels of communication were demonstrated in question 3 ($p$=.003), which addressed the comfort level of participating in clinical discussions. Data analysis found that non-US students had a mean score that was statistically different than those born in the United States. Non-US born students reported that they were less at ease participating in clinical discussions. Question 24 ($p$=.022) demonstrated that non-US born students had a statistically lower level of confidence in communication with their clinical coordinator (the faculty member who oversees and coordinates clinical education). Question 13 ($p$=.000) demonstrated that non-US born students had less comfort compared to US born when asked if they understood hospital jargon/slang, another measure of communication.

Table 2
*Survey Questions and Results: US-Born vs. Non-US Born Students*

| | Survey Questions | Group 1* Mean | Group 2** Mean | T-test Results | Category |
|---|---|---|---|---|---|
| Q1 | I handle myself well in social gatherings that are unfamiliar to me. | 2.6 | 3.3 | *p*=.094 | Social Comfort |
| Q2 | I can hold conversations with most clinical staff regardless of gender. | 2.0 | 3.2 | *p*=.003 | Social Comfort |
| Q3 | I do not have difficulties participating in clinical discussions. | 2.3 | 3.5 | *p*=.002 | Communication |
| Q4 | It is not difficult for me to express a different opinion in clinical seminar (a forum of classroom discussion). | 3.0 | 3.3 | *p*=.399 | Communication |
| Q5 | I feel comfortable with patient contact, including with the opposite sex. | 2.2 | 2.6 | *p*=.417 | Social Comfort |
| Q6 | I felt confident asking questions in clinical seminar prior to my first clinical experience (a forum of classroom discussion). | 2.2 | 2.7 | *p*=.248 | Communication |
| Q7 | I felt valued as a member of the hospital team. | 3.2 | 3.6 | *p*=.388 | Clinical Confidence |
| Q8 + | I felt that I was able to give clear instructions to patients. | 2.0 | 3.1 | *p*=.001 | Clinical Confidence |
| Q9 | I can perform basic tasks, such as patient transport and transfer. | 2.2 | 2.6 | *p*=.287 | Clinical Confidence |
| Q10+ | I connect with my classmates. | 2.1 | 3.0 | *p*=.009 | Social Comfort |
| Q11+ | I could follow instructions written in patient charts and/or exam requisitions. | 1.9 | 3.0 | *p*=.003 | Clinical Confidence |
| Q12 | If I had difficulties in clinic I felt I could discuss them with my clinical coordinator. | 2.3 | 2.9 | *p*=.155 | Social Comfort |
| Q13+ | I understand hospital jargon/slang. | 2.3 | 3.7 | *p*=.000 | Communication |
| Q14+ | I can perform basic radiological/therapeutic/nuclear medicine exams (depending on educational track). | 2.7 | 4.9 | *p*=.000 | Clinical Confidence |
| Q15 | I felt I was instructed well regarding patient transport and transfer before my first clinical experience. | 2.6 | 3.3 | *p*=.121 | Clinical Confidence |
| Q16 | I can hold a conversation with my clinical coordinator. | 2.0 | 2.5 | *p*=.242 | Clinical Confidence |
| Q17+ | I felt able to communicate with patient family members. | 2.1 | 2.8 | *p*=.059 | Clinical Confidence |
| Q18+ | I felt that I could deal with conflict in the clinical setting. | 2.4 | 3.3 | *p*=.007 | Clinical Confidence |
| Q19+ | I felt able to ask clinical staff questions regarding radiological/therapeutic procedures (depending on educational | 1.9 | 2.9 | *p*=.009 | Clinical Confidence |

| | | | | | |
|---|---|---|---|---|---|
| | track). | | | | |
| Q20+ | My instructor prepared me for patient communication. | 2.1 | 3.0 | *p*=.015 | Clinical Confidence |
| Q 21 + | I know the chain of command in the clinical setting | 2.2 | 3.0 | *P =.050* | Clinical Confidence |
| Q22+ | When I ask questions in the clinical setting I understand the answers. | 2.2 | 3.1 | *p=.013* | Clinical Confidence |
| Q23+ | I understand and practice basic radiation protection. | 1.6 | 2.6 | *p=.011* | Clinical Confidence |
| Q24+ | I felt confident asking my clinical coordinator questions regarding my clinical performance. | 2.1 | 3.0 | *p=.022* | Communication |

** Students born in the United States (Likert scale from 1-strongly agree to 7-strongly disagree)*
***Students not born in the United States (Likert scale from 1-strongly agree to 7-strongly disagree)*

*+ = Rows indicate sigificance, p ≤ .05*

Question 2 ($p$ = .003) revealed statistical significance when the means between the two study groups were compared. Non-US born students had a lower level of social comfort holding a conversation with a staff member regardless of gender. They also reported a weaker mean in question 10 ($p$ = .009) when asked if they connected with their classmates.

Non-US born students had different means that tested statistically significant when compared to their US born counter parts in questions 8 ($p$ = .001), 11 ($p$ =.003), 14 ($p$ =.000), 18 ($p$ =.007), 19 ($p$ =.009), 20 ($p$ = .015), 21 ($p$ =.050), 22 ($p$ =.013), and 23 ($p$ =.011), all of which pertained to clinical confidence. Non-US born students demonstrated a lower level of clinical confidence. Questions 8 and 11 referred to giving and following instructions (these questions are also strongly related to communication). Non-US born reported a lower level of ease when asked if they could give and/or follow instructions. Question 14 asked the students if they could perform basic radiologic/therapeutic exams. Once more non-US born students reported that they were less confident in doing so. Question 18, which asked the students if they could deal with conflict in the clinical setting, showed non-US born students perceived that it was more difficult for them to deal with conflict in the clinical setting. They reported less confidence when asked if they felt comfortable asking clinical staff questions regarding clinical procedures in question 19. This theme carried on in question 22 which asked students if they understood the answers to questions they posed in a clinical setting. Question 20 demonstrated that non-US students felt that instructors prepared them less for patient communication. Question 21 indicated that non-US born students were less positive when asked if they knew the "chain of command". The understanding of radiation protection was also statistically different between the two groups (question 23). Students born outside the US reported that they understood less about radiation protection.

The null hypothesis, that there is no difference of perceived clinical education preparedness between US born and non-US born students, is thus rejected. Non-US born students produced statistically different means for 14 of the 24 survey questions. This indicates that non-US born students perceived that they were less confident in in all three domains.

## Discussion

This non-experimental causal comparative study evaluated perceived clinical educational preparedness in undergraduate radiation sciences students at a large urban university. The analysis compared US born and non-US born students. It was found that a student's place of birth was an influencing factor in each of the clinical preparedness domains: communication, social comfort, and clinical confidence. It is important to point out that English language was not considered in this research, only place of birth.

The survey indicated that in each of the domains, (communication, social comfort and clinical confidence) there were questions where non-US born students reported statistically inferior means. It is important to note that in utilizing a Likert scale survey, no student group reported extremely poor means. The questions with the most statistically significant difference in mean scores was question 13, "I understand hospital jargon", and question 14 where students were asked if they felt they were able to perform basic radiologic/therapeutic/nuclear medicine exams. The meaning of the word "jargon" may have not been easily definable for non-US born students. That may have skewed the responses to that question. If non-US born students perceive themselves to be less clinically prepared this may have led them to feel less confident in performing basic radiologic/therapeutic/nuclear medicine exams.

The strength of this study is its ability to provide useful information about the subjects in the study. There are several studies outside of the radiation sciences that address differences between culturally diverse student populations in the medical field(s), which gives this study its foundation. A large urban university provided the researcher with the desired mixed demographics. The research questions could be useful to large urban culturally diverse universities with a radiologic science(s) department.

Informing faculty, clinical instructors, and hospital staff of the perceived differences in clinical education preparedness in non-US born students could serve as a catalyst for instructional change. Realizing that cultural influences can affect clinical education experiences, clinical instructors can formulate modifications or additions in instruction that help non-US born students feel more clinically prepared. These modifications in instruction could heighten awareness of the barriers non-US born students may encounter in clinical education.

The study subjects varied a great deal and this could have affected the outcome of the survey results. Varying demographics such as age, gender, race, and cultural backgrounds could have influenced the results. It would be difficult for such a small sample size to have all the demographic characteristics in the case being studied. Attitudes toward authority may also affect the results. Students may react differently toward authority figures in the hospital clinical setting regardless of their level of clinical preparedness. Reactions to authority figures may be mistaken for clinical preparedness or the lack thereof. To alleviate the possibility of the results being skewed, additional questions could be added to the survey to measure attitudes towards authority. A larger sample size also allows other demographic characteristics to be studied or measured. This could provide additional information of differing cultural influences on perceived clinical preparedness.

The major drawback of this pilot study is the limited sample size. To achieve an adequate sample size, this study had to be carried out over a three year period. There was no control over individual group size. By identifying other universities with similar demographics and educational curriculum, additional student populations could be added to a future sample. It is the goal of the researchers to continue this study in the future with the addition of multiple higher educational institutions.

Clinical preparedness perceptions could have been affected by the strengths and weaknesses of the varying clinical sites in which students are placed. The university in this study utilized twenty clinical sites. The clinical sites were a mix of state, for-profit, and freestanding facilities, each of varying size and patient volumes. Each clinical site operates differently and departmental staff may have different views on education and students. Hospital staff attitudes and perceptions may influence student responses. Sub-dividing clinical setting type (educational institution, community based hospital, freestanding center, etc.) into sub categories may help detect situational differences. Again, a larger sample size would be required.

## Conclusion

Educational institutions in the United States have increasingly integrated culturally diverse students into the higher educational system in recent years. Increased cultural diversity training could heighten awareness that the perceived communication, level of social comfort, and clinical confidence in non-US born students may differ from those who were born in the United States. These differences may become more evident in a health care setting where the clinical preparedness domains are extremely significant in the learning process.

Helping these students increase their comfort level in communication and social situations may help them increase their clinical confidence. This could be done by raising the awareness of the educators and reviewing the curricula design and pedagogy. By extending this pilot study to other large urban universities could add further insight into the perceptions of clinical education of non-US born students.

## References

Andrews, G. J., Brodie, D. A., Andrews, J. P., Hillan, E., Gail Thomas, B., Wong, J., et al. (2006). Professional roles and communications in clinical placements: A qualitative study of nursing students' perceptions and some models for practice. *International Journal of Nursing Studies, 43*(7), 861-874.

Baldwin, A., Woods, K., Simmons, M. C., Baldwin, A., Woods, K., & Simmons, M. C. (2005). Diversity of the allied health workforce: The unmet challenge. *Journal of Allied Health, 35*(2), 116.

Bandura, A. (1999). Social cognitive theory: A genetic perspective. *Asian Journal of Social Psychology, 2*(1), 21.

Dunn, S. V. (1997). Undergraduate nursing students' perceptions of their clinical learning environment. *Journal of Advanced Nursing, 25*(6), 1299.

Fan, C., & Mak, A. (1998). Measuring social self-efficacy in a culturally diverse student population. *Social Behavior and Personality, 26*(2), 131.

Hall, P., Keely, E., Dojeiji, S., Byszewski, A., & Marks, M. (2004). Communication skills, cultural challenges and individual support: Challenges of international medical graduates in a Canadian healthcare environment. *Medical Teacher, 26*(2), 120-125.

*The joint committee on education programs in nuclear medicine technology.* (2012). Retrieved from http://www.jrcnmt.org/

Lee, J., & Rice, C. (2007). Welcome to America? International student perceptions of discrimination. *Higher Education, 53*, 381-409.

Papp, I., Markkanen, M., & von Bonsdorff, M. (2003). Clinical environment as a learning environment: Student nurses' perceptions concerning clinical learning experiences. *Nurse Education Today, 23*(4), 262-268.

Rodger, S. (2008). Clinical education and practice placements in the allied health professions: An international perspective. *Journal of Allied Health, 37*(1), 53.

Rogan, F., Miguel, C., Brown, D., & Kilstoff, K. (2006). You find yourself: Perceptions of nursing students from non-English speaking backgrounds of the effect of an intensive language support program on their oral clinical communication skills. *Contemporary Nurse, 23*(1), 72-86.

Seabrook, M. A. (2004). Clinical students' initial reports of the educational climate in a single medical school. *Medical Education, 38*(6), 659.

The Joint Review Committee on Education in Radiologic Technology. (2012). *Accredited radiation science programs; October 2012 monthly statistics.* Retrieved from http://www.jrcert.org/monthly-statistics/

Thrall, J. D. (2006). Education and cultural development of the health care workforce part II opportunities for nonprofessional workers. *Radiology, 204*, 311-314.

Yoder, M. K. (2001). The bridging approach: Effective strategies for teaching ethnically diverse nursing students. *Journal of Transcultural Nursing, 12*(4), 319.

---

**About the Authors:**

**Timmerie Cohen** *PhD, RT (R) (T) CMD is an assistant professor and clinical coordinator of radiation therapy education in the Department of Radiation Sciences at Virginia Commonwealth University. She has 16 years of experience in the field of radiation oncology having worked as a radiation therapist, medical dosimetrist, and educator. Dr. Cohen completed her Doctoral Studies at Virginia Commonwealth University in Public Policy and Administration.*

**M. Ferell Justice** *MS RT (R) is Assistant Professor in the School of Medicine at Virginia Commonwealth University and serves as the Clinical Radiation Safety Educator for VCU Health Systems. He received his M.S. from Virginia Polytechnic Institute and State University in Education with an emphasis in Health Promotion. Research interests include multicultural subjects pertaining to patient care, student relations, and radiation safety topics.*

**Melanie C. Dempsey**, *MS, RT(R) (T), CMD, is an assistant professor and program director of radiation therapy education in the Department of Radiation Sciences at Virginia Commonwealth University. She has more than 25 years of experience in the field of radiation oncology having worked as a radiation therapist, medical dosimetrist and department manager. Ms. Dempsey is completing her doctoral studies in education at Virginia Commonwealth University*