Published in final edited form as:

Public Health Nurs. 2017 September ; 34(5): 493–499. doi:10.1111/phn.12341.

INCREASING THE PIPELINE AND DIVERSITY OF DOCTORALLY PREPARED NURSES: DESCRIPTION AND PRELIMINARY EVALUATION OF A HEALTH DISPARITIES SUMMER RESEARCH PROGRAM

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Abstract

Despite calls to increase the number and diversity of doctorally prepared nurses, recent data indicate a severe shortage of PhD-prepared nurses, especially those of racial/ethnic minority backgrounds. This is concerning given that evidence indicates that racial/ethnic minority PhD-prepared nurses are well-positioned to improve health disparities, by addressing the needs/concerns of medically underrepresented groups. The purpose of this paper is to describe and provide a preliminary evaluation of a summer research program for minority nursing students. Online surveys were administered to assess for student satisfaction, knowledge gains, attitudes towards research, and intentions to pursue a PhD among minority undergraduate nursing students (N = 6) participating in the 10-week program. Favorable trends were observed related to satisfaction, knowledge gains, and attitudes toward research. Fifty percent of the sample intended to pursue a PhD immediately after the program, compared to none before the program, and this result was maintained at 1-year post-program. The summer research program appears to be a promising strategy for increasing the number/diversity of PhD-prepared nurses. More research on the implementation of programs exposing minority nursing students to health disparities research is needed to strengthen evidence that similar programs can serve to increase the pipeline of diverse doctorally prepared nurses.

Keywords

health disparities; summer research program; research training; nursing research education; public health nursing education

INTRODUCTION

The Institute of Medicine (IOM, 2010) Future of Nursing Report sheds light on the important role that PhD prepared nurse scientists play in creating the knowledge base for quality care, improving patient outcomes, and educating the next generation of nurses. Given the important role PhD prepared nurses play, the IOM recommended doubling the number of doctorally prepared nurses by 2020 (IOM, 2010). Nevertheless, national data indicates a shortage of PhD prepared nurse scientists, with less than 1% of nurses having a PhD in the U.S. (HRSA, 2013).

The Institute of Medicine (2010) also stressed the importance of preparing a diverse nursing workforce that is reflective of the changing demographic of the U.S. population and equipped to address health disparities. Well-trained ethnically diverse health disparities researchers are in a position to make a unique impact on the science of eliminating health disparities by addressing the needs and concerns of underrepresented groups, broadening the research agenda, and increasing access to culturally appropriate care (Stoff, Forsyth, Marquez, & McClure, 2009). Evidence indicates that racial/ethnic minority representation among health professionals is associated not only with increased access to, but also improved quality of healthcare for medically underserved minority populations (HRSA, 2006). This may be because racial/ethnic diverse healthcare providers, including nurses, are more culturally prepared to provide care for, and likely to serve in medically underserved communities (HRSA, 2006; Williams et al., 2014). Additionally, majority health professionals may gain skills in cultural competency from their minority colleagues (Saha, Guiton, Wimmers, & Wilkerson, 2008). However, the shortage of ethnically diverse researchers is particularly grave among nurse scientists. According to the American Association of Colleges of Nursing 2015–2016 report on Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing, only 31% of students enrolled in researched-focused nursing doctoral programs were from minority backgrounds in comparison to the U.S. general population demographics which indicate 41% minority representation among the general national population (AACN, 2016; *U.S. Census - United States QuickFacts*, 2015). Though nursing schools have made improvements in recruiting and graduating nursing students more reflective of the U.S.' diverse population, there is still a long way to go before equal representation is achieved.

State level data in Florida are consistent with the national trends. According to the Florida Center for Nursing, less than 1% of registered nurses hold a PhD (FCN, 2016), and there has been a 36% decline in FL Nursing PhD program enrollment for the 2012–2013 reporting period (FCN, 2013). Additionally, 49% of doctoral nursing students in Florida are Non-Hispanic White. Black and Hispanic students are the most underrepresented minority group with only 11% and 8% of students being Black or Hispanic respectively, while Florida population demographics indicate 17% and 25% Black and Hispanic representation among the general state population (FCN, 2013; *U.S. Census - Florida QuickFacts*, 2015). Further, minorities may face numerous potential obstacles in pursuing a PhD, including limited access to mentors they identify with, economic barriers, and lack of exposure to research experiences.

Summer research programs may be an effective pathway for minority undergraduate nursing students to develop a “nurse researcher identity” that encourages the pursuit of PhD programs in nursing or health related fields. The importance of developing a research identity in promoting the pursuit of a PhD has been described in other science disciplines (Carlone & Johnson, 2007). Undergraduate summer research experiences also appear to change both the intention and enrollment into PhD programs in science, technology, engineering, and mathematics (STEM) disciplines (Eagan et al., 2013; Gould & Macpherson, 2003; Pender, Marcotte, Sto Domingo, & Maton, 2010). Despite the promise of summer research experiences, there is a paucity of literature describing how these programs have been implemented in nursing. The purpose of this paper is to describe and provide a preliminary evaluation of a summer research training program targeting minority nursing students that aims to encourage and equip nursing students to pursue a PhD in nursing or related field. We hypothesized that the summer research program would improve attitudes towards research, and increase intentions to pursue a PhD in nursing or related field. Additionally, we hypothesized that the summer research program would lead to high knowledge gains and satisfaction.

Health Disparities Summer Research Program

The summer research program was supported by the Florida Action Coalition and funded through the Florida Blue Foundation in response to state trends demonstrating the decline in nursing PhD program enrollment and the lack of student diversity. Nursing students were matched with faculty mentors with active health disparities research projects. Areas of research included human trafficking, substance abuse, mental health, Lesbian, Gay, Bisexual, Transgender (LGBT) health, and teen pregnancy prevention.

Students were matched with faculty mentors based on interests and preferences after a speed networking event between selected nursing students and health disparities researchers. The program required 20 hours of work per week for 10 weeks, and students were paid \$10/hr for a total of \$2000 over the entire period. Students participated in a wide variety of activities dependent on the specific research project they were working on. For example, one student had the opportunity to work out of a community-based organization that provided services for victims of human trafficking. Another pair of students had the opportunity to participate in intervention fieldwork by conducting nursing home visits for families that suffered from issues with substance abuse. Another student was able to conduct interviews with victims of intimate partner violence to learn about HIV screening patterns in this population. These were unique opportunities in that students had exposure to community-based health disparities research that often involved direct exposure to individuals experiencing health disparities. Students also had the chance to participate in training events for research assistants and doctoral students at the school of nursing, such as a training event on database management held by two faculty experts. Additionally, students participated in many other research related tasks assigned by their individual mentors, such as literature searches/reviews, data entry and analysis, transcriptions, and focus groups, among others.

Students were also required to participate in a weekly 2 hours seminar on topics relevant for nurse researchers. Examples of seminar topics included, preparing an abstract for

submission to a conference, ethics in research, leadership roles for nurse researchers, doctoral pathways in nursing, how to conduct a literature search, data collection and management, and statistical analysis. Students were also able to recommend topics for discussion. These seminars also served as a forum for students to discuss achievements and challenges from their work week amongst themselves, as well as with the principal investigator of the program.

Students were required to conduct a poster presentation to summarize their research. Students were provided with a poster template and were guided by their individual mentors on the structure for their poster. The posters were presented during the last week of the summer research program, which served as good practice, and then again at a local nursing conference during the following Fall semester. The conference they attended also served as a way to expose students to professional responsibilities and different career trajectories. All conference related expenses were covered. See table 1 for poster presentation titles.

METHODS

Design

A pretest/posttest case series design was used to evaluate the first year of the Florida Blue Summer Research Program, which began in summer 2015 with a cohort of 6 students. Data was collected using online surveys via Qualtrics Software prior to students participating in the program, upon completion, and one year later. Approval from the university's institutional review board (IRB) was obtained prior to recruitment and data collection. Although students were required to complete the online surveys as part of the summer research program, there was a separate consent process whereby students provided electronic informed consent to have their surveys and focus group data used for research purposes. All participating students provided informed consent.

Recruitment and Subject Selection Criteria

Participants were recruited from nursing schools in South Florida by faculty, staff, and student organizations through presentations, personal interactions with students, and email distributions. To be eligible to apply for the program, participants had to be currently enrolled in an undergraduate nursing degree program (ADN or BSN), have at least 2 semesters left to complete their degree, and have a minimum 3.0 G.P.A. In addition, participants had to meet at least one of the following criteria, which the National Institutes of Health (NIH) defines as an underrepresented minority: disabled, socioeconomically disadvantaged, reside in a rural geographical area, or come from an underrepresented racial or ethnic group in the biomedical sciences, which included American Indians or Alaska Natives, Black or African Americans, Hispanics or Latinos, and Native Hawaiians or other Pacific Islanders. (NIH, 2015)

Procedures

Students interested in the program were asked to complete an online application via Qualtrics Software. The application provided an overview of the program, structure and student expectations, and eligibility criteria. In addition, the application asked for students

contact information, major/minor, expected year of graduation, year of study, G.P.A., country of origin, languages spoken, race/ethnicity, resume/CV, a personal statement, and references. Students who met the eligibility criteria for the program were asked to participate in an individual interview with the program's principal and co-investigators. Students were then asked questions to determine their fit for the experience. The best fitting candidates were offered acceptance into the program.

Those offered acceptance into the program were required to sign an official acceptance letter and confidentiality agreement. Students and mentors were matched based on research interests and preferences. Students and mentors were asked to further acquaint themselves via email and discuss any additional pre-requirements mentors may have had for the students. All students were required to complete the Collaborative Institutional Training Initiative (CITI) human subjects' certification, as well as the baseline assessment for the evaluation of the program prior to officially beginning their summer research experience. Students were also asked to provide informed consent for the use of their baseline and future assessments for research purposes. Upon completion of the summer research experience, students were asked to complete a post-experience assessment. Students were asked to complete a 1-year follow-up assessment approximately 1 year after the start of their summer research experience, and will be asked to complete this same assessment yearly for 4 additional years.

Measures

Demographic questions—Students were asked to provide gender/sex, age, ethnicity, race, country of birth, preferred language at home, disabilities, current academic status, expected year of graduation, current academic institution, parents' highest level of education completed, and parents' country of birth.

Knowledge Gains—Knowledge gains from the experience were assessed only at posttest using an adapted version of the 20-item measure from the previously validated SURE survey which assesses the students perspective of change (Lopatto, 2004). The scale used a 5-point Likert system: no gain or very small gain (1), small gain (2), moderate gain (3), large gain (4), or very large gain (5). Students were also asked two additional questions regarding knowledge about health disparities careers (yes or no), and a self-reflection of the program as a learning experience at 1-year follow-up; options were, "My research experience was a waste of time for me – I didn't learn much (1)", "Well, it was better than working just for a salary, but I don't think I learned a lot (2)", "I feel neutral about it – there are definitely good things, but also not so good things about a research experience (3)", "I had a good time, I learned a lot, I'd do it again. It was fantastic (4)", and "In my mind, this is the way to learn what research is about (5)". ($\alpha = .36$).

Attitudes toward research (ATR)—Students were asked to complete an adapted version of the previously validated 32-item Attitudes Toward Research Scale (Papanastasiou, 2005). The scale consists of items listed on a 7-point Likert scale; strongly disagree (1), disagree (2), somewhat disagree (3), neutral (4), somewhat agree (5), agree (6), strongly agree (7). The scale includes five sub-scales to assess for attitudes toward research: research usefulness

($\alpha = -.63$), research anxiety ($\alpha = .84$), positive attitudes ($\alpha = .83$), life relevancy ($\alpha = .56$), and difficulty of research ($\alpha = .79$).

Intentions to pursue a PhD in nursing or health related field—Students were asked about their plans for education beyond their undergraduate degree, for continuing education before and after the research experience, and for continuing education within the next 12 months. These questions were adapted from the previously mentioned SURE survey (Lopatto, 2004). Questions were non-Likert multiple choice.

Satisfaction with research experience—Students level of satisfaction with the summer research program was assessed using an adapted version of the previously mentioned SURE survey (Lopatto, 2004). The satisfaction measure was a 4-item scale using a 5-point Likert system (scores ranged from 1–5). A higher score indicated a higher the level of satisfaction.

Qualitative Questions—Students were asked to describe how the summer research program met their goals and expectations, and to describe how their goals/plans to enter a health disparities research career had changed.

Analysis

Data collected was analyzed using IBM SPSS Statistics for Windows, Version 22.0. Descriptive statistics were generated for participant characteristics at baseline and follow-up periods. Frequencies of responses were generated for measures that did not include a scale. Means were calculated for ATR scores at all time-points along with a net-improvement score from pretest to 1-year follow-up. Open-ended questions were analyzed using conventional qualitative content analysis (Hsieh & Shannon, 2005).

RESULTS

The cohort consisted of a total of 6 female students, primarily White, and of Hispanic/Latino descent ($n = 5$). The majority preferred to speak English at home ($N = 4$), and the mean age was 26.5 ($SD = 8.29$). The majority were born in the USA ($N = 4$).

Knowledge gain scores at posttest were overall high, with an average score of 4.5 or higher on the 5 point scale among all items ($SD = .41 - .84$). See table 2.

Many of the students reported positive ATR at baseline. Therefore, for many items, high scores were maintained or minimally changed at posttest and 1-year follow up. However, noticeable improvements were seen among some items. The greatest improvements were observed in the research anxiety subscale. See table 3.

Although none of the students reported wanting to pursue a PhD at baseline, half of them reported wanting to pursue a PhD at immediate posttest, the remaining reported wanting to pursue a DNP. At 1-year follow-up, 4 students reported wanting to pursue a PhD or wanting to work and then go to school for a PhD/MD/professional graduate degree. The remaining two reported wanting to pursue their DNP or FNP degree. Five out of 6 students indicated

that they now had goals/plans to enter a health disparities research career as a result of the summer experience. Additionally, informally and on an individual basis, we learned that 3 of the students applied to graduate programs in public health or nursing, of which 2 were successfully admitted (1 PhD in Nursing, and 1 Master of Public Health).

Satisfaction scores at posttest were overall high, with an average score of 4.3 or higher on the 5 point scale among all items ($SD = .52 - .82$). Five out of six students reported that they were very likely to choose to have another research experience. See table 4.

When discussing how the summer research program met their goals/expectations, and how their goals/plans to enter a health disparities research career had changed, three themes emerged from student responses; pursuit of a health disparities research career, pursuit of a research-focused graduate education degree, and awareness of research processes.

Students discussed the value of the summer research experience in influencing their desire to pursue a career addressing health disparities. Many of the students were not aware of the role that they could take in addressing health disparities by engaging in research. As one participant said, "This program opened my eyes to the area of health disparities nursing and research and helped me realize that in the future I want to become involved with similar projects." Being exposed to working with different populations and health disparities research projects contributed to students' awareness of needs and stimulated their interest in the field. For example, one of the participants said, "Before I hadn't considered doing research. Now my goal is to in the future eventually conduct research to improve health outcomes." For many, this was the first time they had been exposed to the role of a nurse researcher working to eliminate health disparities.

In addition to the increased awareness regarding health disparities research careers, students also learned about research related graduate degrees in nursing and other related fields through their mentors, all of whom had a PhD in nursing or health related field. Students became interested in the career path and expressed interest in pursuing a PhD after the program. As one student said, "After completing this program, I decided I wanted to pursue a health disparities research career. I will be completing my master of public health degree in the upcoming years and hope to use that to transition into a PhD". Many students were familiar with clinical track graduate programs, but much less with PhD programs since they are more strongly focused on research, a topic that is less commonly discussed in undergraduate nursing programs. After the summer research program, students appreciated the new knowledge regarding this career trajectory, and some described a change in their pursuit of graduate education as a result. For example, one student said "Originally, my plan was to continue my education in nursing and apply for a DNP program, however during and after my research experience at El Centro it became clear to me that I want to dedicate myself to research and I will be pursuing a PhD in Nursing instead."

Prior to the experience, students were more familiar with the clinical processes of nursing that aim to improve the health of individual patients, as opposed to nursing research processes which can have different aims. For example, part of the research process is to describe and disseminate new findings that have been generated through research. As one

student said, “Prior to participating in this health disparities research program, I did not consider the research aspect of the nursing profession. I was not aware of how much you can impact the community by creating new knowledge. Now, I intend on pursuing a PhD in nursing and making a difference in the community by working towards eliminating health disparities.” The research process is a complex one that involves many individuals and stages in order to accomplish the success of a research project. After the experience, students had a greater understanding of this. One student described, “The program has enhanced my educational experience. I was able to gain so much knowledge about research, its components, the process and all the interdisciplinary teams involved. It offered me the opportunity to work with and gain insights from experts in the field of research as well as allowed me to build professional relationships.”

CONCLUSION

This paper describes a health disparities summer research program designed to engage minority undergraduate nursing students in health disparities research experiences. Six minority undergraduate nursing students were paired with health disparities researchers for a 10 week experience, which included research assistant responsibilities, mentorship, seminars, and research poster presentations. We assessed the preliminary impact of the program across three time points, baseline, upon completion of the program, and one year after, using online surveys. Positive outcomes overall were observed as a result of the program. Although small sample size was a barrier that did not allow for statistical significance, there were knowledge gains in research and positive changes in attitudes towards research across the three time points which merit attention. To our knowledge, this is the first published evaluation which examines the impact of a summer research program for minority undergraduate nursing students in promoting pursuit of a PhD.

One of the most notable findings from this preliminary evaluation was that there was a 0% to 50% increase at immediate posttest in the number of students intending to pursue a PhD, a result that was maintained at 1-year follow-up. This finding provides preliminary support for the utility of summer research programs as a mechanism to increase the pipeline of minority PhD prepared nurse scientists. Five out of six students answered yes when asked if their goals/plans to enter a health disparities research career had changed as a result of the summer research experience. Students described that they wanted to pursue a PhD as a means to addressing health disparities. These findings are aligned with the first step of the Three-Dimensional Conceptual Model of Nursing (Williams et al., 2014), which describes workforce diversity as a step towards health equity achievement. The model stresses that eliminating health disparities is possible through workforce diversity because racially/ethnically diverse nurses are well prepared to provide culturally competent care, and are more likely to work in medically underserved minority communities. Our findings are also consistent with the existing literature regarding summer research programs, which indicate that these experiences are successful at encouraging minority undergraduate students to pursue doctoral education in STEM disciplines (Carlone & Johnson, 2007; Eagan et al., 2013; Gould & Macpherson, 2003; Pender et al., 2010).

The health disparities summer research program was also designed to help ensure that students had a positive and meaningful research training experience. This was achieved by ensuring a good interest and personality match between mentors and students, networking opportunities for the students themselves, and providing a supportive and welcoming environment. Students in the program provided positive feedback at posttest and 1-year follow-up. Many students indicated that they entered this experience not knowing what to expect since they had minimal or no experience with research, and appreciated the opportunity to participate. It is likely that the high levels of satisfaction with the research experience contributed to changes in decisions to pursue a PhD in nursing or health related field. In fact, most students continued their research training after the experience as undergraduate students, and 3 of the students applied to graduate programs in public health or nursing, of which 2 were successfully admitted.

Although this manuscript provided a preliminary evaluation, it also had a substantial focus on describing the summer research experience in order to address the lack of published literature representing summer research programs for nursing students. However, a more rigorous evaluation of the program will be completed after collecting and analyzing data from the entire sample of students who will have completed the summer research training experience.

Lastly, there are various limitations that should be considered. The results of this evaluation are based on a sample size of six, the first cohort of the program. It is unknown if the students in future cohorts will have similar experiences. In addition, this program evaluation implements a case-series study design. This type of design may lack strength in establishing cause-effect relationships, since there was no randomization or a control group. Lastly, the Knowledge Gains measure (Lopatto, 2004) and ATR Life Relevancy and Research Usefulness subscales (Papanastasiou, 2005) performed poorly when testing for reliability. It is likely, that the small sample size of this study may have limited our ability to accurately assess the reliability of these measures. However, our analysis provides preliminary evidence that the measures used may not be the most appropriate for our sample. We suspect that some students interpreted items differently from one another based on their experiences with research. For example, those students who had exposure to complex statistical analysis as part of their experience may have perceived that they have more trouble with arithmetic than students who had minimal exposure. Also, our students were nursing students, with an orientation towards research that may be better aligned with social/behavioral science. Indeed, the ATR and knowledge gains measures were drawn from evaluations of student research experiences that were not conducting specifically social/behavioral research, and may have been more appropriate for biomedical research training experiences. The evaluation that implemented the knowledge gains measure had a sample where only 2% of participants were working on social/behavioral research (Lopatto, 2004). The evaluation that implemented the ATR measure used a sample that conducted research related to education/academics (Papanastasiou, 2005). More research is needed to develop appropriate research experience evaluations for nursing students.

Implications

Despite the limitations of this preliminary evaluation, the findings of the program have important implications for nursing research experience programs and public health nursing practices. Schools of nursing should consider increasing research opportunities for undergraduate nursing majors in order to increase the number of PhD prepared nurse scientists, especially among schools which contain greater numbers of minority students, and where there may not be other opportunities for students to engage in research. Research experiences for students could be provided through specific programs or course credit over the summer, when students may have more time. In either case, consideration needs to be given to providing students with incentives to participate in order to overcome potential competing demands, such as the need to work. Also, a great deal of attention needs to be paid to ensuring that students are satisfied with their experience, as these experiences likely influence their perceptions regarding a career as a nurse scientist more broadly. Finally, it is likely that the health disparities focus of this program served as a way to connect and engage minority nursing students to the important role they can play in addressing health disparities through research that has a public health impact on vulnerable communities. It is equally important to evaluate the role that programs such as this play in increasing competencies in public health nursing as it relates to addressing health disparities.

Acknowledgments

The Florida Blue Summer Research Program was funded by the Florida Blue Foundation. Support for this research was received from the Center of Excellence for Health Disparities Research: El Centro, National Center on Minority Health and Health Disparities grant P60MD002266.

References

- AACN. [accessed on 07/01/2016] 2015–2016 Enrollment and Graduations in Baccalaureate and Graduate Programs in Nursing. 2016. Retrieved from <http://www.aacn.nche.edu/government-affairs/Student-Diversity-FS.pdf>
- Carlone HB, Johnson A. Understanding the science experiences of successful women of color: Science identity as an analytic lens. *Journal of Research in Science Teaching*. 2007; 44(8):1187–1218. DOI: 10.1002/tea.20237
- Eagan MK Jr, Hurtado S, Chang MJ, Garcia GA, Herrera FA, Garibay JC. Making a Difference in Science Education: The Impact of Undergraduate Research Programs. *Am Educ Res J*. 2013; 50(4): 683–713. DOI: 10.3102/0002831213482038 [PubMed: 25190821]
- FCN. [accessed on 07/01/2016] Florida Post-Licensure Registered Nurse Education: Academic Year 2012–2013. 2013. Retrieved from https://www.flcenterfornursing.org/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=699&PortalId=0&TabId=151
- FCN. [accessed on 07/01/2016] Florida's Registered Nurse Supply: 2014–2015 Workforce Characteristics and Trends. 2016. Retrieved from https://www.flcenterfornursing.org/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=1194&PortalId=0&TabId=151
- Gould DJ, Macpherson B. Evaluation of an undergraduate neuroscience research program at the university of kentucky. *J Undergrad Neurosci Educ*. 2003; 2(1):A23–27. [PubMed: 23494130]
- HRSA. [accessed on 07/01/2016] The Rationale for Diversity in the Health Professions: A Review of the Evidence. 2006. Retrieved from <http://bhpr.hrsa.gov/healthworkforce/reports/diversityreviewevidence.pdf>

- HRSA. [accessed on 07/01/2016] The US Nursing Workforce: Trends in Supply and Education. 2013. Retrieved from <http://bhpr.hrsa.gov/healthworkforce/reports/nursingworkforce/nursingworkforcefullreport.pdf>
- Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005; 15(9):1277–1288. DOI: 10.1177/1049732305276687 [PubMed: 16204405]
- IOM. [accessed on 07/01/2016] The Future of Nursing: Leading Change, Advancing Health. 2010. Retrieved from <http://www.nap.edu/download/12956>
- Lopatto D. Survey of Undergraduate Research Experiences (SURE): first findings. *Cell Biol Educ*. 2004; 3(4):270–277. DOI: 10.1187/cbe.04-07-0045 [PubMed: 15592600]
- NIH. [accessed on 07/01/2016] National Institute of General Medical Sciences. 2015. Retrieved from https://www.nigms.nih.gov/Education/Pages/factsheet_diversity.aspx
- Papanastasiou EC. Factor structure of the attitudes toward research scale. *Statistics education research journal*. 2005; 4(1):16.
- Pender M, Marcotte DE, Sto Domingo MR, Maton KI. The STEM Pipeline: The Role of Summer Research Experience in Minority Students' Ph.D. Aspirations. *Educ Policy Anal Arch*. 2010; 18(30):1–36. [PubMed: 21841903]
- Saha S, Gupton G, Wimmers PF, Wilkerson L. Student body racial and ethnic composition and diversity-related outcomes in US medical schools. *Jama*. 2008; 300(10):1135–1145. DOI: 10.1001/jama.300.10.1135 [PubMed: 18780842]
- Stoff DM, Forsyth A, Marquez ED, McClure S. Introduction: the case for diversity in research on mental health and HIV/AIDS. *Am J Public Health*. 2009; 99(Suppl 1):S8–15. DOI: 10.2105/ajph.2008.153536 [PubMed: 19246664]
- U.S. Census - Florida QuickFacts. [accessed on 07/01/2016] 2015. Retrieved from <http://www.census.gov/quickfacts/table/PST045215/12>
- U.S. Census - United States QuickFacts. [accessed on 07/01/2016] 2015. Retrieved from <https://www.census.gov/quickfacts/table/PST045215/00>
- Williams SD, Hansen K, Smithey M, Burnley J, Koplitz M, Koyama K, ... Bakos A. Using social determinants of health to link health workforce diversity, care quality and access, and health disparities to achieve health equity in nursing. *Public Health Rep*. 2014; 129(Suppl 2):32–36. [PubMed: 24385662]

Table 1

Summer Research Program Student Poster Presentation Titles

1	Lessons Learned from Evaluating Specialized Services Provided to Victims of Human Trafficking in Miami Dade County
2	Preparing Online Electronic Health Surveys for Adolescent Girls: Insights Gained as a Florida Blue Scholar
3	Lessons Learned: Recruiting/Retaining Mothers with Substance Use and Other Mental Disorders
4	Transgender Women's Satisfaction with Healthcare Services in South Florida: A Mixed Method Study
5	The Shared Decision Making Process of HIV Testing with Victims of Intimate Partner Violence

Table 2

Average Knowledge Gain Scores Among Nursing Students that Participated in the Summer Research Program at Immediate Posttest (N=6)

Items	Mean (N=6)	Standard Deviation
Clarification of a career path	4.50	.837
Understanding of the research process in your field	4.50	.458
Understanding of how researchers work on real problems	4.50	.548
Understanding that scientific assertions require supporting evidence	4.50	.837
Learning ethical conduct in your field	4.67	.516
Skill in how to give an effective oral presentation	4.50	.548
Learning to work independently	4.67	.516
Becoming part of a learning community	4.83	.408
Confidence in my potential to be a researcher	4.50	.548

Table 3

Changes in Attitudes Toward Research Among Nursing Students that Participated in the Summer Research Program (N =6)

Items (<i>subscale</i>)	Pretest Mean (N=6)	Posttest Mean (N=6)	1-Year Follow-Up Mean (N=6)	Pretest to 1-Year Net Improvement Score (N=6)
Research makes me anxious (<i>research anxiety</i>)	2.17	2.33	1.50	.67
I feel insecure concerning the analysis of research data (<i>research anxiety</i>)	4.00	2.50	2.17	1.83
Research scares me (<i>research anxiety</i>)	1.83	1.67	1.50	.33
Research is useful for my career (<i>research usefulness</i>)	5.00	6.83	5.67	.67
I find it difficult to understand the concepts of research* (<i>research difficulty</i>)	2.17	2.83	1.50	.67
Research is stressful* (<i>research anxiety</i>)	3.33	3.33	2.33	1.00
Research makes me nervous* (<i>research anxiety</i>)	3.17	2.83	2.00	1.17
Research is complicated* (<i>research anxiety</i>)	3.67	3.67	2.67	1.00
Research thinking does not apply to my personal life* (<i>life relevancy</i>)	2.00	3.00	1.83	.17
Research is difficult* (<i>research anxiety</i>)	3.00	3.83	2.50	.50
Research-oriented thinking plays an important role in my daily life (<i>life relevancy</i>)	5.17	4.83	6.00	.83
Research is a complex subject* (<i>research anxiety</i>)	5.17	4.83	4.33	.84

* indicates an item that is reverse coded

Table 4

Average Satisfaction Scores Among Nursing Students that Participated in the Summer Research Program at Immediate Posttest (N=6)

Items	Mean (N=6)	Standard Deviation
Satisfaction regarding expectations of experience	4.33	.816
Supervisor performance	4.67	.516
Experience with other students	4.83	.408
Overall sense of satisfaction with research experience	4.83	.408