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The Importance of Nursing Research

Martha S. Tingen, PhD, APRN, BC [Professor], Anna H. Burnett, BSN, RN, Rachel B. Murchison, BSN, RN, and Haidong Zhu, PhD, MD [Assistant Professor]

Medical College of Georgia, Georgia Prevention Institute, Ms. Murchison is Staff Nurse, MCG Health Inc., Shock Trauma ICU, Augusta, and Ms. Burnett is Staff Nurse, Children's Healthcare of Atlanta, Neonatal ICU, Atlanta, Georgia.

Abstract

Nursing research has a tremendous influence on current and future professional nursing practice, thus rendering it an essential component of the educational process. This article chronicles the learning experiences of two undergraduate nursing students who were provided with the opportunity to become team members in a study funded by the National Institute of Nursing Research. The application process, the various learning opportunities and responsibilities performed by the students, and the benefits and outcomes of the experience are described. The authors hope that by sharing their learning experiences, more students will be given similar opportunities using the strategies presented in this article. Nursing research is critical to the nursing profession and is necessary for continuing advancements that promote optimal nursing care.

Throughout the 21st century, the role of nurse has evolved significantly. Nurses work in a variety of settings, including the hospital, the classroom, the community health department, the business sector, home health care, and the laboratory. Although each role carries different responsibilities, the primary goal of a professional nurse remains the same: to be the client's advocate and provide optimal care on the basis of evidence obtained through research.

Baccalaureate programs in the United States prepare students for entry-level nursing positions. The focus is to care for individuals throughout the human life span. Knowledge is acquired from textbooks, classroom and Web-based instruction, simulation, and clinical experiences. The goal of all programs is for students to graduate as safe, entry-level professionals, having received a well-rounded exposure to the nursing field. Students are exposed to evidence-based nursing practice throughout their curriculum; however, the allocated time for nursing research is often limited. Many programs require only one 3-credit hour course for nursing research. This amount of time is limited, despite the broad spectrum of nursing research and its influence on current and future nursing care.

Research is typically not among the traditional responsibilities of an entry-level nurse. Many nurses are involved in either direct patient care or administrative aspects of health care. Nursing research is a growing field in which individuals within the profession can contribute a variety of skills and experiences to the science of nursing care. There are frequent misconceptions as to what nursing research is. Some individuals do not even know how to begin to define nursing research. According to Polit and Beck (2006), nursing research is:

systematic inquiry designed to develop knowledge about issues of importance to nurses, including nursing practice, nursing education, and nursing administration. (p. 4)

Nursing research is vital to the practice of professional nursing, and the importance of its inclusion during undergraduate instruction cannot be overemphasized. Only with exposure and experience can students begin to understand the concept and importance of nursing research.

The purpose of this article is to describe undergraduate students' experiences of becoming aware of and participating in a federally funded research study from the National Institute of Nursing Research. As a part of funding for the study, which was an AREA award (Academic Research Enhancement Award, R15 mechanism), there were designated opportunities for student involvement. The primary aim of the research study was to investigate the effects of gene-environment interactions on risk factors of preclinical cardiovascular disease in a cohort of 585 young adults who all had a positive family history of cardiovascular disease (i.e., essential hypertension or premature myocardial infarction at age 55 or younger in one or both biological parents or in one or more grandparents), verified in the medical record. Specific genes examined included cytochrome P-450, family 1, subfamily A, polypeptide 1; cytochrome P-450 2A; glutathione S-transferase mu 1; and glutathione S-transferase theta 1. Cardiovascular-dependent measures were diastolic blood pressure, endothelium-dependent arterial vasodilation, left ventricular mass indexed for body size, systolic blood pressure, and total peripheral resistance. The effects of ethnicity and gender were also explored.

Learning Opportunity

The learning process began with the principal investigator (M.S.T.) of the study visiting the junior class (class of 2007) of baccalaureate students at the Medical College of Georgia. This particular student group was chosen due to their academic standing because they would have the chance to take full advantage of learning directly from a nurse researcher for one full year before graduation. The principal investigator briefly presented and discussed the growing field of nursing research, the advancements made by nursing research, and the critical role of nursing research to nursing practice. The principal investigator also presented an overview of the funded research study and extended an invitation to students to apply for two part-time positions on the grant that were designed specifically for nursing student involvement. Students recognized the excellent opportunity and were intrigued with the future possibilities. They understood this option was unique and appeared to be a great pathway for becoming an active participant in learning the nursing research process through involvement in an official nursing research study.

The principal investigator established objective criteria for the application process. The criteria included writing a maximum 1-page essay sharing the reasons why the students wanted to join the research project as a team member and also sharing their personal and professional goals for involvement in the study. Many students were interested; thus, it was a very competitive process. The principal investigator reviewed the essays and selected approximately 10 prospective individuals for an interview. The interview was an extension of the essay. At the interview, the principal investigator further described the positions, provided a detailed overview of the grant, and had the opportunity to gain a better understanding of the student candidates. The students were encouraged to ask questions to further understand the expectations of the prospective opportunity. The interview also provided the students with increased exposure to the study's goal and more familiarization with the expectations of the funded positions.

After the interview process was completed, two individuals were selected, per the grant specifications. The selected individuals described the interview process as a positive experience that helped solidify their desire to become involved in the research study. The principal investigator emphasized that this job opportunity was designed to be a learning experience in which the students would be guided through the entire research study process and become members of a multidisciplinary team. Time responsibilities for each student included approximately 6 hours per week. The principal investigator communicated clearly that the nursing baccalaureate program was the first priority for the students, and thus provided a flexible work schedule.

Research Study Experience

The students began working in early April 2006. The first step in the work experience included 6 weeks of funded orientation. This was their first exposure to the research process; thus, it was important for the students to be provided with a strong foundation. Orientation included attending a team meeting and being introduced to the members of the multidisciplinary team (i.e., biostatistician, cardiologist, geneticists, nurse researcher, and psychologist, all of whom served as co-investigators, and the genetic laboratory personnel); reviewing the grant application; completing the Collaborative Institutional Training Initiative (CITI) (2000); completing the Roche educational program on genetics; and touring the worksite facilities. Reviewing the grant gave the students a better understanding of the specific aims and objectives of the study and the intended procedures of the genetic laboratory work in which the students would be involved. The complexity of the grant required the principal investigator to further explain and clarify specific details. The CITI training, which is required by the institution's Office of Human Research Protection, was completed online and took approximately 5.5 hours. The CITI program was presented in a tutorial format, and satisfactory completion of numerous quizzes was required. The task was tedious and time consuming, but valuable and essential, as it increased the awareness of the established codes of conduct for research. At the conclusion of the CITI training, the students understood the necessary policies and procedures for maintaining security and confidentiality of human subjects, the legal and ethical issues regarding the research process, and the essential procedures for research conduct.

Although the students had a basic understanding of genetics, they completed the Roche Genetics Education Program (2004) to gain a deeper understanding. The program was direct and easy to navigate and was excellent for all learning styles, as it contained both visual and auditory explanations. The explanations covered both basic and complex genetic concepts. Through the use of the genetics program, the students were able to comprehend abstract genetic details and to further understand the importance and influence of genetics on personal health. To conclude the orientation process, students were taught basic laboratory procedures, such as polymerase chain reaction and restrictive enzyme digestion, which were used to perform genotyping for the study. After these procedures had been observed several times, the students were given the opportunity to acquire hands-on experience with these laboratory techniques. Each of these components of the orientation process provided the students with the needed foundation for becoming involved in the research study.

After approximately 2 months of orientation, the students were ready to begin working in the genetics laboratory. One of the primary responsibilities of the students would be to further learn and become confident with genotyping techniques. The laboratory was shared among research personnel of several funded studies, with various research experiments being conducted concurrently. The students, under the supervision of the principal investigator and geneticist (H.Z.), also worked with experienced research assistants to perform the genotyping. The students maintained a daily log describing the laboratory

genotyping procedures and experiments, and these logs were reviewed at team meetings. Although the actual procedure for polymerase chain reaction seemed straightforward, the students quickly learned that quality control must be used. Sometimes during genotyping, the DNA samples did not produce results. The students discovered that there are numerous contributing factors to successful polymerase chain reaction, such as quality of DNA templates, primer specifications, temperature settings, gel conditions, pipette measuring accuracy, and general laboratory techniques. Even the slightest error could result in permanent DNA sample loss, major experiment failure, or DNA sample contamination.

The students met with the research team members frequently to discuss and troubleshoot potential solutions and problem solve techniques that would foster improving the success rate and productivity of the genotyping. From the laboratory experience, the students learned that every detail must be considered and addressed precisely and meticulously when conducting experiments. Sometimes the process became frustrating, but the students soon discovered that patience and persistence were the most important attributes for a laboratory researcher to possess. The laboratory experience was an excellent hands-on learning opportunity. The students no longer viewed research as strictly information gathered from a journal or textbook, but rather as a physical act that required extreme concentration, dedication, and determination.

After spending numerous months in the laboratory performing the required genotyping, the students had the opportunity to be exposed to another role of a nurse researcher. They performed literature reviews regarding the study. Although the students had written papers in their nursing school program that required literature citations, they were not familiar with all of the library resources available to them. In no time, the students learned which library and online resources had the most validity and what would be the most relevant to their study. The literature search results provided the students and principal investigator with information on new studies that had been conducted on gene-environment interactions regarding tobacco smoke exposure and cardiovascular disease. From the literature review experience, the students learned the importance of being selective and time efficient. Often when a search was first begun, thousands of articles were listed, but the students learned the importance of narrowing the searches to the specific areas of focus. After the students completed their searches, they met with the principal investigator, who provided direction on the articles identified as the most relevant to the study.

The students continued working with the principal investigator during data review, analysis, and preparation of dissemination of the results (i.e., the publishing process). They helped to prepare an abstract submission of the study presented at an international meeting (Tingen et al., 2007). They also helped with the preparation of manuscripts of the study results. By the conclusion of their work experience, the students will have been exposed to and participated in the entire research process.

Benefits and Outcomes

From the students' perspectives, this opportunity was extremely beneficial. Prior to this experience, the students were not familiar with nursing research. Their original perception of research was that it was conducted by people with chemistry, biology, biochemistry, and genetic degrees in laboratories at major universities. They now realize that nursing and research can be combined and that optimal nursing care is dependent on the latest research findings. In addition, the students believe this opportunity has been beneficial in learning that nurse researchers are valuable to nurses in other settings. For example, one of the long-term goals of this research study is to develop appropriate interventions for children who are more susceptible to and at risk for the harmful effects of tobacco smoke due to their genetic

heritage. The information obtained by a nurse researcher can be disseminated to nurses who work directly with the individuals to whom the research applies. Practice that has shown to be effective through research allows nurses to better advocate for patients and provide the best possible care. Although the majority of nurses who provide patient care will be consumers of nursing research, implementing evidence-based nursing practice is crucial to provide optimal nursing care. Information from nursing research has the potential to directly impact the care provided to patients in all health care settings.

Now that the students have had the opportunity to become more familiar with nursing research through involvement as team members, they recognize that their future professional possibilities are endless. Nursing research is an emerging and growing field in which individuals can apply their nursing education to discover new advancements that promote evidence-based care. They learned the research process and the important roles that each team member plays during the study phases of conception, design, implementation, analysis, and dissemination. Each aspect of the research process is important and contributes to the overall success of the study.

The students also discovered the benefit of trying new things. Prior to this experience, they had little exposure to the research process and nursing research. Consequently, they had to be receptive to learning and recognize that acquiring new knowledge was a gradual process. At times, the students felt anxious because all aspects were new, but they realized that without trying, they would never advance and feel comfortable with the research process. As the students reflected, they thought this was an excellent growing experience professionally, scholastically, and personally. In addition, this opportunity benefited the students' peers through discussions and their sharing of work responsibilities, the research process, and the importance of evidence-based practice. As future nurses, the students are strong proponents of nursing research, and this experience has also broadened their horizons regarding future professional growth and opportunities. In addition, they have a better understanding of the importance of scientific evidence to support their clinical practice. As a result, the students thought that a stronger emphasis should be placed on nursing research in undergraduate baccalaureate education and that more students should have the opportunity to participate as team members in nursing research studies.

Conclusion

The students were almost one full year into nursing school and thought they had learned about all of the possibilities for their futures when they were first presented with this learning opportunity. They knew their future options were numerous and included working in acute care and community settings. They also realized they could further their education and pursue graduate degrees to include a master's degree and become an administrator, educator, clinical nurse specialist, nurse anesthetist, or nurse practitioner, or potentially pursue a doctorate. They did not know there was an emerging and growing field in which their nursing education could be applied and furthered—the area of research and the role of becoming a nurse researcher. Prior to this experience, students perceived their possibilities for a professional career in nursing were tremendous. Now by being involved in the entire process of conducting a federally funded research study, they realized their future professional possibilities are limitless.

The authors of this paper hope that by sharing their experience, they will encourage both nursing faculty and nursing students to not only introduce the research process into the nursing curriculum, but also to consider making nursing research a tangible and more integrated process. They think that a more beneficial approach to the introduction of research may be achieved through incorporating research-related content into each nursing

course throughout the educational process. This could be conducted in addition to the current curriculum plan of many schools of nursing that require a single and concentrated 3-hour research course with a goal of research becoming a positive experience for students that is enthusiastically received as a new learning opportunity. In addition, students who are involved as team members in a funded research study may be provided with scheduled classroom opportunities for making progress reports to their peers. Also, the students could field questions regarding the research project and their experiences. These activities may foster increased learning and interest about research among the students' classmates.

As nursing students are the future members of the nursing profession, and for the profession to continue to advance, nursing research must be the foundation of comprehensive, evidence-based clinical practice. This may only occur with increased exposure to nursing research. Therefore, it is critical that the future members of the nursing profession be exposed to, develop an appreciation for, and become more involved in nursing research, and thus incorporate its outcomes into the delivery of optimal professional nursing practice.

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