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The Influence of Undergraduate Research Assistant Experiences on Future Nursing Roles

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The Undergraduate Nursing Research Assistant Experience

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Abstract

Background: Undergraduate nursing students often have difficulty comprehending the relevance of research to their future as nurses. Experiences working as an undergraduate research assistant (URA) may provide opportunities to gain knowledge and appreciation of research.

Purpose: The purpose of this study was to explore the URA experience.

Methods: A qualitative descriptive study method was used. Interviews were conducted with nurses who had worked as research assistants during their undergraduate education. Interview transcripts provided the data that were analyzed for themes.

Results: Nine former research assistants participated in this study. Data analysis yielded three main themes: *immersion in the research process*, *empowered to practice evidence-based nursing*, and *future nurse scientists and educators*. Participants described how serving as a URA gave them opportunities to experience the entire research process. They learned skills and gained confidence in how to use evidence to change practice. Their experiences inspired them to consider graduate school and becoming a nurse educator.

Conclusions: An undergraduate research program can be a valuable approach to preparing baccalaureate nursing students for clinical practice and for graduate education. Positive experiences with conducting research are essential to nurturing the next generation of nurse scientists and educators.

Keywords: research, undergraduate student, nursing, education

Introduction

Research is the foundation of evidence-based nursing practice. Baccalaureate prepared nurses are expected to know how evidence is produced and how to evaluate it (Institute of Medicine, 2011). The American Association of Colleges of Nursing (AACN, 2008) recognizes that “(p)rofessional nursing practice is grounded in the translation of current evidence” (p. 16). Nurses with a baccalaureate education are expected to have a basic understanding of research and its application to nursing practice (AACN, 2008). However, undergraduate nursing students often have difficulty comprehending the relevance of research to their future as nurses because they are so focused on learning psychomotor clinical skills (Burkhart & Hall, 2015; Halcomb & Peters, 2009). In addition, faculty programs of scholarly inquiry may be invisible due to a lack of student engagement in research at the baccalaureate level, which can limit their understanding of the important role nurse scientists play in advancing nursing practice (Burkhart & Hall, 2015; Ryan, 2016). Investigation of innovative approaches to generating enthusiasm for research among undergraduate nursing students and their effects after graduation is needed (Kessler & Alverson, 2014). An undergraduate research assistant program is one approach that has been identified in the literature (Wells & Cagle, 2009). This paper reports the findings of a study whose aim was to explore the undergraduate research assistant experience as a strategy for engaging nursing students in research.

Literature Review

The literature described several approaches for generating enthusiasm for nursing research by making it more visible to undergraduate nursing students. Much of the literature described program initiatives whose purpose was to engage undergraduate nursing students “hands on” experiences in conducting research with faculty mentors. Many programs required a dedicated research class or integrated research content and/or experiences into a capstone course or public health practicum (Jansen et al., 2015). Nursing faculty in New Zealand embedded a longitudinal study into an undergraduate nursing research course. Students completed a research field experience that included data collection and analysis of an interview with a study participant. Student satisfaction with the course improved and the number of students failing the research course decreased from 16 in one year to two the next year (Niven, Roy, Schaefer, Gasquoin, & Ward, 2011).

Other approaches to engaging undergraduate students in research involved working with a faculty mentor to complete an honors project (Jansen et al., 2015; Reitmaier Koehler, Reveling Smith, Davies, & Mangan-Danckwart, 2015), an ongoing research internship (Burkhart & Hall, 2015; Kessler & Alverson, 2014), or a summer research program (Salerno, Gonzalez, & Hooshmand, 2017; Warkentin, Popik, Usick, & Farley, 2014). These experiences ranged from one semester or a summer course to a 2-year commitment. Students either developed their own research or evidence-based practice projects (Reitmaier Koehler et al., 2015) or participated in their faculty mentor’s ongoing research (Kessler & Alverson, 2014; Salerno et al. 2017).

Salerno et al. (2017) described a summer research internship for undergraduate students of color, who were matched with a faculty mentor whose research focused on health disparities. The six students worked 20 hours a weekly and received an hourly wage. The experience included a variety of experiences with research, weekly participation in a seminar, and presenting a poster that summarized their research. The researchers used a pretest/posttest case series design to evaluate gains in research knowledge, changes in attitudes toward research, and intentions to pursue a PhD in nursing or other health related field. At the one year follow-up, five participants indicated their plans to pursue a research career; two had been admitted to PhD programs; two others had plans to pursue a doctorate.

Kessler and Alverson (2014) discussed similar activities for engaging undergraduate students in faculty research (e. g. weekly meetings with mentors, participation in all phases of the research process, and a poster presentation at a conference). These students, however, were recruited during their sophomore year and spent five semesters working as research team members. To better understand the rewards and challenges of participation in this program, the researchers surveyed 13 previous undergraduate students about their experience as research team members within 3 months to 2 years after graduation. Ten reported being actively involved in research projects as either graduate students or clinicians (Kessler & Alverson, 2014).

Undergraduate nursing students benefit from research collaborations with faculty that extend beyond a dedicated research class. Students developed a passion for research and an understanding of the research process. They also expressed an interest in attending graduate school and becoming a nurse scientist (Kessler & Alvarez, 2014; Reitmaier Koehler et al., 2015; Salerno et al., 2015). More research is needed about the effects of these undergraduate research experiences after graduation. Qualitative interviews with former undergraduate research assistants may facilitate a more in-depth description of the experience and how it has affected their practice as nurses and career decisions. Therefore, the aim of this study was to explore former undergraduate research assistants’ perceptions regarding the effects of this experience on their practice as professional nurses.

Methods

A qualitative descriptive design was chosen to investigate the Qualitative descriptive studies provide a comprehensive description of a phenomenon. It can also identify areas for further research (Sandelowski, 2000).

Context/Setting

The context of this study was a state university in the Mountain West region of the United States. Nursing students take a required research course at the beginning of their junior year. The course provides an introduction to both research and evidence-based practice methods that follow the AACN (2008) guidelines. The School of Nursing received funding in 2004 to establish an endowed chair in nursing, with the aim of promoting nursing research. The undergraduate research assistant program was implemented in 2006 as one strategy to accomplish as this aim

through providing practical assistance to faculty for conducting their research. The endowed chair provided program oversight. Undergraduate research assistants were hired and paid as university student workers with funds from the endowment. The aim of the undergraduate research assistant program encompassed more than simply paying students to assist faculty in conducting their research projects. Faculty were expected to help their research assistants develop a small study that could inform their research. Students were encouraged to develop a poster of their projects that were presented at a regional nursing research conference.

The co-principal investigators (co-PIs) conducted this study during their tenure as undergraduate research assistants under the supervision of the current endowed chair, who was also their faculty mentor. In her new role, she was interested in using qualitative methodology to explore former undergraduate research assistants' perceptions of their experience in the program, which previously had not been studied. At the start of the study these two women were in their second semester as undergraduate research assistants and had limited experience with the program. The faculty mentor, however, had worked with individual undergraduate research assistants before becoming the endowed chair. The co-PIs were trained in interfaculty mentor who had experience conducting qualitative studies (Grassley & Eschiti, 2008; Grassley, Shcleis, & Manda,), trained the

Questions were designed to progress from a general discussion of breastfeeding to specific perceptions of what mothers needed from grandmothers.

Sample

A convenience sample of seven former undergraduate research assistants was recruited for this study. The only inclusion criteria was experience working in the undergraduate research assistant program. The faculty mentor emailed five faculty colleagues who provided nine names and emails of former research assistants who had given them authorization for the co-PIs to contact them. Nine responded to the recruitment email and the co-PIs were able to arrange interviews with seven, all of whom were unknown to them. The other two for unknown reasons did not respond to requests for an interview. The seven licensed nurses (one male and six female) who participated in this study had worked as undergraduate research assistants between one and 2 ½ years. Length of time since graduation ranged from 8 months to 6 years. All had worked as undergraduate research assistants with length of experience between one and 2 ½ years. However, participants' descriptions demonstrated a consistency of experiences in spite of the different lengths of time since graduation. In qualitative descriptive studies, sample variation can broaden insight into a phenomenon (Neergaard, Olesen, Andersen, & Sondergaard, 2009; Sandelowski, 2000)

Data Collection/ Analysis

The co-PIs developed a 13 question moderately-structured interview guide that explored participants' experiences as undergraduate research assistants (see Table 1). The questions were directed toward "discovering the *who*, *what*, and *where*" of participants' experiences (Sandelowski, 2000, p. 338). They were designed to progress from a general discussion of their experience (What were some of the projects you worked on?) to specific perceptions about their experience (What was most meaningful? What challenges, if any, did you experience?). The interview guide was reviewed with the faculty mentor; the co-PIs also obtained feedback from the other undergraduate research assistants at a monthly program meeting. The faculty mentor trained the co-PIs to conduct qualitative interviews using prompts such as "can you say more about that?" The co-PIs practiced interviewing each other.

Data collection began after the Boise State University institutional ethics review board approved the study. Data were collected between February, 2017 and May, 2017. The co-PIs conducted interviews together in a private room within the School of Nursing building; one asked questions and the other took notes. Two interviews were conducted via phone for the convenience of the participant, one of whom was caring for her young child and was the only interview that included another person. After written consent was obtained, the participants were interviewed by one of the co-PIs. Interviews were recorded using a smart phone application and immediately downloaded into a secure file on the university's secure server.

The co-PIs transcribed the interviews verbatim and analyzed them for themes using the content analysis method suggested by (Mayan, 2001). The co-PIs Each research team member read and analyzed each transcript for themes using the content analysis method suggested by Mayan (2001). Major themes were developed by identifying repeating phrases or ideas which were organized and grouped into categories. The team met several times to discuss findings and agree on categories, which were integrated into themes within and across each transcript. Data saturation, defined as

the point when no new themes were being obtained, was reached at seven interviews. To verify themes and establish trustworthiness of their analysis, the co-investigators conducted two interviews beyond data saturation. They also discussed their findings multiple times with their faculty mentor and used participant quotes to produce a rich description of the URA experience.

Findings

Seven licensed nurses participated in this study. Length of time since graduation for the licensed nurses ranged from 8 months to 6 years. All had worked as undergraduate research assistants with length of experience between one and 2 ½ years. Participants' descriptions demonstrated a consistency of experiences in spite of the different lengths of time since graduation. Five had worked primarily with one faculty; two had assisted several faculty. Data saturation was reached after the first seven interviews when no new themes were generated. To identify verify these themes, the two new graduate nurses who had current experience as research assistants were interviewed. Three themes emerged from the data that provided a rich description of the undergraduate research assistant experience: *immersion in the research process, empowered to practice evidence-based nursing, and future nurse scientists and educators.*

Understanding research can be daunting to an undergraduate nursing student. All participants had taken the required foundational research course in their second semester of the nursing program. They described how working as an undergraduate research assistant provided opportunities that helped them to expand and apply this course content. PG6 commented:

"I feel like a lot of the time in research (class), you memorize the definitions (IN CLASS), but it still feels pretty abstract. And then as an RA everything kind of came together."

Participants became immersed in the research process as they assisted faculty with a variety of projects. Data entry and literature reviews were common assigned tasks. One participant learned to use an online data management program to set up a data base. Participants described collecting using a variety of methods such as surveys, observations, and interviews. They gained experience analyzing qualitative data with their faculty mentors. Six participants co-authored manuscripts with their faculty mentor; one edited a textbook. They learned about the institutional review board process and importance of protection of human participants in research.

Participants valued these opportunities to experience all aspects of the research process. This immersion was a foundational component of their experience as research assistants. PC3 and PG6 explained how their perspectives on research and nursing changed.

Being able to work with her (my mentor) and see the whole process from start to finish...from research questions to publication. It was pretty enlightening just to get that experience on how the whole process works...how research happens...the idea to the output.(PC3)

Seven of the nine participants described how their faculty mentor helped them develop their own research project. Most involved small studies that informed the faculty mentor's research. PF6 described this process:

So I was kind of helping (my mentor) gather information about breastfeeding and...online information and that kind of morphed into my own project, (which was) this little research study that was looking at online information available for...a teen mom...what is the information out there that is reliable information versus the stuff that's not reliable, and which...are more appealing to teens. That was really cool.

The opportunity to be immersed in the research process as a student RA empowered participants to practice evidence-based nursing after graduation, the second theme.

Empowered to Practice Evidence-Based Nursing

Participants described how they were able to apply the tools they learned as a research assistant into their work settings. They expressed their confidence in being able to access and use the literature in evaluating the evidence for clinical decision-making. This is exemplified by the following participant statements.

I know what's real research and what's not real research and I know where to find it. PC5

If I was to do another research project, I feel like I can...I feel like I have the tools...(such as) the ability to find good research peer reviewed articles ... if I need to answer a question that I would like a good answer for, I will seek those kinds of articles and read those kinds of articles to advance my own nursing knowledge. PF6

I think it made me better at being able to find evidence to back up if there (was) going to be a policy change...at my workplace....so it's definitely helped with my ability to find... scientific and technical literature... to appraise the validity of those papers...and to interpret papers and findings. PC3

These former research assistants collectively emphasized how their experience as an undergraduate research assistant highlighted the importance of research in practice and encouraged them to question the status quo. PA1 said,

I think I gained a lot of skill and a different perspective on just being more willing to question things. For example, whether whatever we are doing is the best thing we can be doing...in my practice now as a nurse, just being able to step back and look at the reason why we do this and is the "why" strong enough that we shouldn't be doing this a different way. What evidence is out there...could we be doing something different. So I think that perspective is something I gained as an RA that is really meaningful to me now.

As a new nurse, work as a former research assistant helped PB2 be an effective member of a committee in charge of developing and evaluating unit policies.

We helped develop the new policy for all the babies on the unit...It was super helpful to have research experience prior to joining the evidence based practice counsel...and getting to be a part of making sure that our patients are getting the most current and the best practice that there is.

Four participants talked about how their experience as an undergraduate research assistant facilitated their job search as a new graduate nurse. PJ9, who had conducted a systematic review of intramuscular injection techniques with her faculty mentor, commented:

I would have never gotten the job I have without being an RA. As an RA you develop critical thinking skills about nursing that I don't think you could get in any other capacity that I can see. The ICU requires major critical thinking skills beyond the everyday. It's a puzzle every day and the critical thinking skills are so valuable. Connecting the science to nursing is the piece that I think being a RA has given me.

Working as a research assistance changed one participant's perspective about nursing and the connection between practice and research:

I think the RA experience opened my eyes to the possibilities of nursing. Nursing is not only for taking care of the patient directly but it's also important to creating the care...but actually nursing research makes me realize, we can actually create the care. (PD4)

Gaining insights into the relationship between nursing practice and research as an undergraduate nursing student equipped participants to be actively involved in facilitating evidence-based nursing practice in their work settings. Some began to explore a future as nurse scientists or educators, the third theme.

Future Nurse Scientists and Educators

Working as an undergraduate research assistant provided opportunities for participants to explore the role of nurse scientist. Participants particularly valued developing relationships with faculty who modeled the role of nurse scientist. Seven of the nine participants identified their faculty mentor as a highlight of their research assistant experience. PD4 described the influence of her mentor as follows. She said:

The most valuable thing to me was the mentoring experience. (She) served as my mentor and I was pretty much always behind her and watching what she was doing and listening to how she was talking to other people. She was always talking about her research and how it could create change for a population. That inspired me...she has shown me...the pathway that led me to my (current) career.

Several participants talked about how working as an undergraduate research assistant gave them a different perspective about the faculty outside of the classroom. PA1, who worked with several faculty, described the meaning of this relationship as follows:

It was...really meaningful to have relationships with those staff members. I got to know them on a different level...It was just really good to work with them on something that was super meaningful to them too. (For example), Dr. D was really passionate about holistic therapies so to be able to work with (her) on research that can provide evidence behind something she is passionate about was super cool. I really enjoyed developing those relationships with the faculty and being able to get to know them and work with them on a different level than some of my peers had the opportunity to (sic).

One participant described the personal benefits of developing a close relationship with a faculty mentor. PC3 described how her experience working with her mentor on a research team helped her develop her communication skills and confidence. She said:

And I think I just became a stronger communicator and collaborator... collaborating with the faculty was just neat...just to be able to be on one level with them, communicating with them, working with them on something...I felt like they were really valuing what I had to say and they trusted me (which) helped me to grow in my confidence as an almost nurse.

The Western Institute of Nursing (WIN) annual regional research conference was a highlight for eight participants. Attendance to the conference was funded by the School of Nursing's endowment. Their faculty mentors encouraged participants to submit an abstract for a poster presentation either through the blinded peer review process or as a student. Four of the participants had their abstracts accepted during the peer review process, which was an honor. Two participants described how their experience of presenting their posters facilitated their confidence in learning how to present their research and a sense of contributing to nursing.

It was valuable because we didn't learn at school how to present the data or how to talk professionally in front of the people and also it helps my communication skills. And it gave me confidence. PD4

Even though I hadn't graduated yet, I felt like I was contributing and I felt like I was a peer at some level...and that helped shape what I felt about what I might want to do in a future career. PB2

WIN provided an important opportunity to explore graduate education and the role of nurse scientist. Participants valued chances to network with nurse scientists from other universities. PA1 described her experience:

I learned a lot there. Because at WIN there are a lot of nurses that are older and have been going to WIN for 40 years, which is cool in itself because (they) have so much experience and know so many things. There are so many graduate students, and you get to see what they are all about...I had an opportunity...to spend a whole afternoon just going around to all the schools and gather information about their different masters and doctoral programs. That was a really cool experience because I had spent an afternoon soaking that up and seeing all the opportunities that are out there for nurses...and realized that bedside nursing isn't the only option. It totally inspired me.

Participants were inspired by their experiences as a research assistant to pursue graduate education. Seven of the nine participants at the time of the study were either in graduate school or exploring graduate programs. PG7 described how working as an undergraduate research assistant changed her thinking about nursing. She said:

It just opened my eyes to the world of research and what opportunities come with that. Getting more familiar with how research works...not being good at it in the beginning and then kind of finding your footing... I'm getting better at this, it's kind of fun....I didn't go into nursing school thinking, oh, I want to do research, but now I would love to go back to school and eventually do research down the road.

Others were inspired to become nurse educators. PA1 said:

It makes me want to be a teacher because I feel like they (faculty) made a really big difference on my perspective and what I learned in nursing school.

Discussion

The findings of this study add to the literature by providing insights into nurses' experiences of working as research assistants during their undergraduate nursing program. The three themes that emerged from the qualitative analysis of the interview transcripts were *immersion in the research process, empowered to practice evidence-based nursing, and future nurse scientists and educators*. Immersion in the research process appeared to be the core experience for these participants. This experience increased their understanding of the importance of research to nursing practice, empowering them to practice evidence-based nursing after graduation. Close relationships with a faculty mentor inspired some to consider a future as a nurse scientist and academic educator.

Working as a research assistant over a 2 to 2 1/2 year period gave participants the opportunity to gain hands-on experience with the complete research process, rather than only one component such as a literature review or data collection. Similar findings were reported in the literature (Burkhart & Hall, 2015; Jansen et al., 2015; Kessler & Alverson, 2014; Salerno et al., 2017; Warkentin et al., 2014). The immersion experience cultivated and facilitated sustained positive relationships between the Undergraduate research assistants and their faculty mentors, which the literature consistently identifies as important (Burkhart & Hall, 2015; Jansen et al., 2015). Immersion also provided the opportunity to experience the sometimes frustrating challenges of conducting a study such as delays in funding or institutional ethics review board approval. Warkentin et al. (2014) described a similar experience during their summer research internship. However, these experiences can cultivate an understanding of how nurse scientists address the complexities of conducting research to nursing (Warkentin et al., 2014).

Working as a URA prepared participants for clinical practice and influenced their future plans. Participants described feeling empowered to practice evidence-based nursing. This is particularly important because current evidence suggests that nursing students often hold negative attitudes about research and have a decreased knowledge of evidence-based practice (Qadire, 2019; Ryan, 2016). Essential III: Scholarship for Evidence Based Practice of Professional nursing practice is grounded in the translation of current evidence into one's practice

However, involvement in research as an undergraduate student fosters an appreciation for the importance of research to nursing and for the link between research and practice (Warkentin et al., 2014). Acquiring the skills to find, appraise, and use research findings developed participants' confidence that they could contribute to improving patient care in their current clinical settings, which was supported in the literature (Kessler & Alverson, 2014; Reitmaier Koehler et al., 2015). Opportunities to present their research at a nursing research conference increased participants' confidence in their ability to talk about their research as they met nurse scientists and doctoral students from other universities. These URA experiences inspired some participants to pursue further education so they could work in academia as educators and nurse scientists. Other researchers also reported that positive experiences with conducting research, particularly with a faculty mentor, provided important preparation for early entry into a PhD program (Burkhart & Hall, 2015; Kessler & Alverson, 2014; Nehls & Rice, 2014). O'Brien and Hathaway surveyed 13 students about their perceptions of their experience participating in an undergraduate research internship with a faculty mentor. Students gained research skills and an understanding of the nurse scientist role. Important results for the students included the opportunity to learn research skills and to be a part of an interdisciplinary team

Implications for Education and Research

This study has implications for nursing education. All undergraduate nursing students need to understand the importance of research to the practice of nursing. The evidence suggests that this is best accomplished through direct involvement in research projects. Nurse educators have creatively addressed this issue by incorporating student

participation in faculty research as part of an existing class, such as a public health practicum or capstone project (Jansen et al., 2015). For example, Niven et al. (2013) embedded a longitudinal research study with older adults into the required research course. Students assisted in collection of data as part of the course. They found that student engagement in the research course improved.

The need for increasing the number of nurse scientists is a critical priority (Nehls & Rice, 2014). Immersion experiences as an undergraduate research assistant or intern encourage students to consider earlier pursuit of a research doctorate (Burkhart & Hall, 2015; Nehls & Rice, 2014; Salerno et al., 2017). These experiences can involve a significant commitment of time and money and are not feasible or practical for all undergraduate students. However, offering select undergraduate students opportunities for extended engagement in research projects with a faculty mentor is a worthwhile investment in the future of nursing science.

Limitations

Our study has limitations. The small convenience sample may not represent the views of all former students who worked as Undergraduate research assistants in our program. However, participants represented a broad spectrum of years. A longitudinal study that surveys former Undergraduate research assistants over time and interviews a randomly selected sample could provide important information about the long-term effect of working as a URA. This study focused on the student experience; investigation of faculty perceptions of working with Undergraduate research assistants could broaden our understanding of this experience. Study findings describe the URA experience in a specific school of nursing and may not apply to other nursing programs. Participants worked as university employees and most assisted several faculty, which differs from approaches described in the literature, such as internships. However, the evidence describes similar student experiences (Kessler & Alverson, 2014; Reitmaier Koehler et al., 2015; Salerno et al., 2017). This program also benefits from ongoing funding from an endowment, a privilege that other nursing programs may not experience.

Conclusions

An undergraduate research program can be a valuable approach to preparing baccalaureate nursing students for clinical practice and for graduate education. Being a URA provided opportunities to experience the whole process of research. Extended engagement with a faculty mentor allowed time to build skills and confidence in providing evidence-based nursing care after graduation. Positive experiences with conducting research are essential to nurturing the next generation of nurse scientists and educators. This investment by individual faculty and schools of nursing is an investment in the future of nursing.

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