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Engaging Undergraduate Nursing Students in Collaborative Research

Nurses are expected to base their practice on evidence from research which requires an understanding of the research process. Evidence-based practice is the use of the best evidence, including research, in making patient care decisions (Smith, et al., 2021). Even with this understanding, undergraduate nursing students may find research courses hard to engage with and as such they may feel unprepared to use research as evidence in their practice (DeJong, et al., 2018). This less than positive perception of the research process challenges faculty to engage students in active learning. Student participation in experiential research projects may impact their attitudes, knowledge, and skills. With faculty collaboration and support, students discover meaning from applying research concepts and methods to the context of their own research projects. Student centered active participation is essential to their academic success and their professional development (Hampton, et al., 2020).

The beneficial effects of pet therapy interactions on stress in college students have been well documented in the literature (Adams et al., 2017; Barker, et al., 2016; Delgado, et al., 2018; Toukonen, & Wheeler, 2018; Wood et al., 2018; Thelwell, 2019). Understanding this, nursing faculty and the founders of the campus pet therapy program developed the Stress Buster Nursing Student Research Project in the summer of 2019. It was introduced that fall on the campus of a private university in New England. This was designed as a research project which engaged students and faculty in learning as active collaborators. It was designed from conception through implementation to be a joint venture with the faculty and students. This project received ethical approval from the university's IRB.

Method

Stress Buster events were held on campus at noted stressful times for students: early during the semester as students entered or returned to the university and again at the end of the

semester prior to final examinations. Stress Buster events involved students interacting with pet therapy certified dogs and their handlers. Students met the dogs on their own or in groups at the campus center as they desired, for 60 to 90 minutes. The events were open to all enrolled students and advertised through fliers, virtual signage, social media, and word of mouth.

The project began in the fall semester of 2019 with two Stress Busters. Only one event took place in the spring semester of 2020. The other was cancelled when campus closed during COVID-19. E-mail communication and Zoom meetings continued with nursing students and the study resumed in the fall of 2020 with one Stress Buster event. After the first event in the spring 2021 semester, 12 students organized data into a poster which they presented at the university's research day. The final (potential sixth) event was cancelled due to COVID-19 campus restrictions.

Nursing students were mentored in the research process within a group project. All students were engaged in review of the literature involving research on pet therapy and human stress especially that of student stress. Before the first Stress Buster event, the founder of the pet therapy program brought her therapy dog to a meeting to discuss pet therapy.

As the project progressed, faculty-student discussion addressed readings regarding ethics of informed consent, missing data, reliability and validity, and maintaining the data collection protocol. The University's IRB informed faculty, upon their inquiry, that Collaborative Institute Training Initiative (CITI) certification for students was not required due to the exempt status of the study. Given that the student participation involved all four academic levels and all level students were engaged and assessed for attaining and maintaining proper protocol procedures (invitation communication techniques, proper informed consent process, vital sign skills, and communication techniques involving pre-and post-pet interaction surveys), upper level nursing students engaged with lower level students in a supportive manner (practicing and

answering their questions regarding data collection). As the project presented findings, again the literature was discussed in terms of pet interaction with college-age students. Students engaged in role-playing with faculty and their peers to prepare for the university research day and their poster presentation. Discussions and working actively together during the entire research project presented opportunities for student socialization, as well as learning about the research process.

Nursing students' names were listed with faculty on the research project poster. After the university research day, the poster was displayed in the main corridor of the nursing department.

Student Roles and Responsibilities

Note that this project was conducted outside required nursing courses and did not affect students' GPA or academic progression. The project involved student volunteers across four academic levels as enrollment in the junior research course was not a requirement for participation. All group members, regardless of class year could participate in the poster development and its presentation.

A total of 45 students volunteered to participate after the initial recruitment flier was distributed to all students (n=280) in the undergraduate nursing department. Given the project's voluntary nature, student participation in data collection was fluid. Some Stress Buster events or project meetings conflicted with required clinical time, other classes or activities, preventing some of the volunteers from joining the project.

After the third Stress Buster event, a survey was distributed to the core group of 25 nursing students engaged in data collection. Responses were returned representing each class level: two freshman, eight sophomores, seven juniors, and three senior students. When asked

which events students had participated in, 18 out of 20 surveyed had participated in all three Stress Buster events.

Depending on the year in the nursing program, students had defined responsibilities. Freshmen invited pet therapy participants to the study and to stations for data collection or circulated to help other students in the project group. Sophomores were responsible for explaining the study and obtaining signatures on the informed consent. Juniors and seniors measured blood pressures and pulses pre- and post-pet interaction to measure physiologic changes. Seniors rechecked abnormal blood pressures or pulses and reported them to nursing faculty for follow-up. They also assisted with administering a survey assessing emotional effects of the participants after they interacted with the therapy dogs.

Prior to the stress Buster event, faculty and students role-played the different responsibilities to ensure that the study protocol was being followed. Students contributed suggestions on study procedures during these meetings. During one meeting, it was identified that 93 participants completed vital signs data collection yet only 71 participants completed post-interaction surveys. When the missing survey data were noted, students analyzed the missing data concern and changed their post-survey data collection positions to increase data completion. They positioned themselves in front of the entrance and exit doors to collect post-pet interaction data. Further they suggested offering bags of Scooby snacks (dog bone shaped cookies) to participants at entrance and exit doors to say thank you and to increase completion of the surveys. Lastly, when students were asking participants to complete the exit survey, they suggested reframing the data collection as a description of "How you were feeling after spending time with the dogs?" rather than simply asking them to complete a survey. Given these strategies, the survey completion rate rose from 61% to 87%. IRB approval was not required for these adjustments since they did not deviate from our original plan.

Nursing Faculty Roles and Responsibilities

Faculty mentored and partnered with the students to engage them in all parts of the research process including ethics, consent, data collection (physiologic measures and surveys), data analysis, and drawing conclusions from the results. They were involved in discussion regarding the IRB. The students summarized the findings and presented a scientific poster for the university's annual research day. Leading up to this event, students learned how to write an abstract and prepare a professional poster. Faculty explained procedural details such as the development of the research question, sampling technique, data collection and measurement error, adherence to implementation protocol, data analysis and results, discussion and implications, and dissemination of findings.

Faculty served as mentors and principal investigators, striving to create an environment that was conducive to active learning without student grading stress. Faculty-student meetings were held both in person and via Zoom when COVID-19 presented in spring, 2020. Regular communication was maintained through Zoom or email while the campus was closed.

Student Reflections

Nursing students were asked to reflect on the faculty/student collaborative research project. The objectives of the project were as follows:

- 1) To encourage and support open communication between faculty and students during collaborative project discussion;
- 2) To engage students in the steps of the research process through planning and implementation;
- 3) To support and empower the students in assuming active research roles and responsibilities; and

- 119 4) To support students' professional role development (analytical thinking, clinical skills,
120 communication, and leadership).

121 A student who entered the project as a freshman and continued with consistent
122 participation throughout the two-year duration, contemplated the four objectives with the
123 following comments:

- 124 1. It was also really sad that once the pandemic hit, we had to meet over Zoom.
125 I feel like there was more of a collaboration of ideas when everyone met in
126 person before the pandemic
- 127 2. From this project I learned the importance of the many different parts of research and
128 how the physical collection of research project data is of equal importance to
129 advertising your study to gain volunteers to participate.
- 130 3. I decided to participate in the project because I wanted more hands-on
131 experience doing things relating to nursing, and I thought that active
132 participation was the best way to do so.
- 133 4. Looking back, participating in the project was one of my best academic decisions
134 because I grew so much from it professionally. Whenever I have an interview in the
135 healthcare field, employers ask me about the research project... It also showed me
136 that there is more to nursing than bedside nursing. I am very glad I participated in
137 this project!

138 **Positive Outcomes, Challenges, and Opportunities**

139 Nursing students grew in their comfort of assuming their roles and responsibilities
140 and were noted to approach faculty less frequently during later Stress Buster events.

They gained a sense of proficiency and confidence in carrying out their own roles as well as helping other nursing students.

Students contributed with analytical thinking related to concerns of missing data, faulty data, or incomplete data and its impact on their project. Students worked together to cover the exit doors post-pet therapy interaction. They gained confidence in approaching participants to complete surveys. They demonstrated professionalism with participants as they grew in their own comfort and confidence such as answering questions regarding vital signs and providing appropriate information when asked about handling school stress.

Faculty noted that students developed group cohesiveness in a networking system; nursing students became acquainted with each other across class cohorts. A sense of belonging and connection with the nursing department and the university were validated on the nursing student evaluations. When asked, to what extent did participation in the research project affect connection with the nursing department (nursing students and nursing faculty), their responses indicated 4 on a 5-point Likert scale, with one being minimal effect and five as the maximum effect.

Students noted some difficulty with the timing of faculty/student meetings as they may have been in class or the clinical setting or ill with COVID-19. Friday afternoon Stress Buster events were challenging, especially if they were held prior to a holiday weekend. It was suggested that some of the meeting sessions be video recorded to be viewed when convenient for the students. Again, these ideas and feedback are hallmarks of active learning (Lisko & O'Dell, 2010; Murray, 2018).

Freshmen perceived their role as inviters into the project as not as prestigious as taking vital signs. Freshman students may benefit from discussion with faculty and upper-class nursing students about the importance of this role. The freshman inviter role features communication which is vital to the foundation of patient engagement. In this context, engaging students in participation and completion of data collection (vital sign measurements and survey responses) are essential to the research project. Deliberative communication is essential in all nursing roles. It is the cornerstone upon which patient centered care is built into nursing practice. Therefore, communication competency affects the quality of inviting participants into a study.

Implications for Nursing Undergraduate Education

Experiential learning can make research methods and project management more interesting to undergraduate students. Our students were engaged in all elements of the research process, making them more prepared to support research in practice, understand new evidence as it pertains to their specialty post-registration and explain that to their patients when new treatments or experimental trials become available to them.

In conclusion, this collaborative nursing pilot project presented with findings that students benefited from not only being enlivened with hands-on student-centered research learning, but as they gained confidence, they developed a sense of ownership in the project. With a growing trust in the supportive meeting milieu, they asked questions driven by their own observations and concerns. They critically analyzed and strategized data collection methods to impact outcomes. Immersion in this pilot faculty/student collaborative research project was characterized by active willingness and opportunities to express their ideas collectively. Participants were committed to the

187 research project and connected with each other and nursing faculty during this
188 experiential learning activity.

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