

Nursing Student-Led Health Education for Sixth Graders on Chicago's South Side

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Abstract

Introduction: Partnerships between schools of nursing and grade schools providing health education to youth are shown to be advantageous. Using Community Based Service Learning for nursing students at a middle school in Chicago, IL, we were able to improve health education for adolescents in an underserved area.

Objective: This project aimed to improve and standardize existing health education efforts for sixth graders ($n = 30$) at a middle school by developing an evidence-based health education curriculum with nursing students.

Methods: This was a descriptive study with a pretest and posttest evaluation addressing the physical, emotional, and sexual health knowledge, attitudes and behaviors of participating sixth graders.

Results: Findings suggest service-learning partnerships may benefit middle schoolers and nursing students.

Conclusion: Implementing a culturally relevant health curriculum using a service-learning framework increased sexual, physical, and emotional health knowledge in Latinx sixth graders and enhanced nursing student learning in a way not possible through classroom and clinical practicum experiences alone.

Keywords

community engagement, reproductive health, Latinx youth, nursing student

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Nurses are expected to function as competent health educators, however there has been little to no formal preparation for this role within nursing curricula (Oermann & Frank, 2018; Walter & Corbridge, 2018). Untrained nursing students face an uphill battle to become skilled teachers who could provide clear health education to patients. This nursing function has been previously shown to be directly important for achieving patient health promotion and advocacy (Pelzang, 2010) and is especially effective when delivered within community settings (Fitzgerald et al., 2016; Smith et al., 2017). Therefore, this project was undertaken using Community Based Service Learning (CBSL) to improve and standardize existing health education efforts by developing an evidence-based health education curriculum for a school's sixth grade students, in the hopes to benefit both the middle schoolers and our nursing students.

Background: Using Nursing Students to Provide Health Education to At-Risk Youth

CBSL involves experiential learning, reflection, and reciprocal learning where the student grows

academically and personally while providing a meaningful contribution to the community (Larson et al., 2011). McGahee et al. (2018) determined that service learning's impact on nursing students proved consequential and beneficial to their professional maturation. George (2015) describes a variety of sites and projects undertaken for service learning, such as projects involving the homeless community and tuberculosis outreach, performing screenings and education at community health fairs, and vaccine administration, among other opportunities. A nursing curriculum based on service learning and community engagement has the potential to address community-identified needs and enhance community health, while enriching the scholarship and diversity of the institution through student engagement and

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academic learning (Irby et al., 2010). CBSL is essential for a practice-based discipline such as nursing (Hamner et al., 2007), and school systems are an excellent venue for meaningful service learning (Larson et al., 2011).

Research has shown that nurse-led health education programs positively impact health outcomes (Awoke et al., 2019; Betz et al., 2016; Isik et al., 2019; Tucker & Lanningham-Foster, 2015). A systematic literature review on nurse-led asthma interventions, for instance, found that education significantly improved asthma management (Isik et al., 2019). Another study, focusing on a parish nurse-led intervention for Mexican-American women with gestational diabetes, concluded that health promotion activities improved after the intervention (Mendelson et al., 2008). In the school setting, Tucker and Lanningham-Foster (2015) demonstrated that a school nurse and student nurse-led intervention on child obesity had a positive impact on physical activity and healthy habits. Similarly, a study by Larson (2011) illustrated an increase in the use of the Guidelines for Adolescent Preventive Services tool to evaluate the use of preventative health services by fifth and sixth graders after a school nurse and student nurse-led intervention.

One community that may benefit from CBSL and student-nurse led education may be youth who have been placed at-risk (Fernandes-Alcantara, 2018). Suboptimal circumstances linked to numerous factors, such as neglect at home or stressful family environments place youth at risk for negative health outcomes (i.e., education, disciplinary problems, and sexually transmitted infections) (Warren & Font, 2015). Due to structural, legal, educational and healthcare system barriers, Latinx youth are more vulnerable to negative health outcomes than the general population (Velasco-Mondragon et al., 2016). Latinx is a gender-neutral, pan-ethnic label used to describe people who self-identify as Hispanic or Latino (Noe-Bustamante et al., 2020). This population consisted of middle schoolers from socioeconomically marginalized and vulnerable families within a predominantly Latinx neighborhood burdened by one of the highest crime rates in the United States and where greater than 30% of the residents live at or below the poverty line (Komenda & Ali, 2017).

The current project originated when a pre-licensure nursing student with no teaching background was assigned the CBSL project of educating Latinx sixth graders in Chicago about emotional, physical, and sexual health. The nursing students all attend a university that strives to foster nurses who can better serve care for marginalized and underserved populations, and are required to complete 16 CBSL hours each semester. In the past, the middle school had no standardized curriculum for nursing student-led health education. Thus, this project aimed to improve and standardize existing

health education efforts by developing an evidence-based health education curriculum. Prior to the development of this project, pre-licensure nursing students taught what they thought was important and received appreciative feedback from the middle school students regarding the information received. Having had no experience as health-educators, these nursing students reported feeling overwhelmed by the mission of the CBSL assignment. They felt unprepared to successfully teach lessons covering emotional, physical, and sexual health topics to sixth, seventh, and eighth grade first-generation English speakers. Four main issues pertaining to their CBSL experiences emerged:

- Although well-intentioned, the student nurses were not trained to teach the content, and the health curriculum was never standardized
- There was no long-term plan to ensure continuity of evidence-based health education programs delivered to middle school students by nursing students
- There was no measurement of changes in knowledge, attitudes, and intentions regarding the educational intervention in order to test its efficacy and impact
- No needs assessment or thorough literature review was performed in order to identify which health components would best inform development of an effective educational intervention specific to this community

Healthy People 2030 and the Center for Disease Control and Prevention acknowledge the positive long-term impact that education can have on under-resourced communities (Education Access and Quality—Healthy People 2030 | *Health.Gov*, n.d.). By working with one community to address their specific needs, this project aimed to foster solidarity between the university, the community, the student nurses, the middle schoolers, and their families in order to build a health curriculum that would be evidence-based in both content and format and sustainable year after year. This health education and community partnership is a culturally responsive step toward health equity for this under-resourced community. In line with the theoretical foundation of participatory action research, the primary investigator and the director of the middle school collaborated to formulate project goals and design from project inception (Olshansky et al., 2005; Shamrova & Cummings, 2017) and believed that this project would prepare student nurses to offer quality health education.

Purpose

The purpose of this project was to develop a community informed, health education curriculum with nursing students that would be evidence based in both content and

format, and sustainable. In order to standardize and improve upon existing nursing student-led health education interventions, a health education curriculum was developed based upon needs identified by the Student Standards Health Education Assessment Project (HEAP Literacy, 2017) and by the director, faculty, and staff of the middle school located in an underserved neighborhood. Furthermore, developing an evidence-based curriculum with direct faculty oversight will offer student nurses the tools they need to understand the role of the health educator.

Sample and Setting

The middle school that participated in this study educates 90 Latinx middle school youth for 8½ hours per day, 5 days per week, year-round using a reading- and math-focused curriculum with required extracurricular team sports participation in order to impede the ongoing cycle of gang violence, poverty and discrimination. By encouraging strong parent involvement and placing a high value on education, the school works with the surrounding neighborhood to form a tight community of caring adults who are open to new ideas. Despite their efforts for community support, the school continues to have ongoing challenges. For example, all middle school students receive free breakfast and lunch, but the students report throwing the fruit to the side in favor of the free, sugar-filled snack options. The school lacks the resources to address substantial student physical and emotional health needs. Therefore, a healthcare support model is needed for forming school-based initiatives and bolstering student health while buffering toxic stress (Franke, 2014).

Two nursing students were assigned as part of CBSL to develop and teach teen health-focused lessons. A total of 30 middle-school students aged 11 to 13 participated in the study. Informed consent was obtained from each sixth grade student and a parent prior to administration of the pretest. While all participating sixth graders were able to read and write in English, explanations and consent statements were offered in both English and Spanish to ensure full comprehension based on the parents' primary language. It was clearly explained that participants could confidentially decline to participate in the evaluative components of the project. Participants who did not wish to fill out a pretest and posttest still completed the program, but instead received a paper grammar exercise of equivalent duration to mimic survey participation. In this way, participation or lack thereof remained confidential, as all students were working simultaneously on similarly appearing written tasks (Calvey, 2008).

Theoretical Frameworks

This project recognizes that each community possess the knowledge, power, and skills to address those needs by overcoming structural and social barriers (Wallerstein & Duran, 2010). The likelihood that research will be relevant to and valued by community members is enhanced when the community is involved in all aspects of the project (Lutnick, 2006; Wallerstein et al., 2018). In the present case, such barriers prevent middle schoolers from obtaining important health-related information, services, and treatments. The rationale for teaching health curricula and the evaluation of such curricula therefore can be based on the Theory of Reasoned Action. This theory proposes that behavior change occurs after education is provided, since education has the power to influence beliefs, attitudes, intentions, and self-efficacy (Glanz et al., 2015). Accordingly, middle school students are more likely to engage in health-promoting behaviors with their peers and family after receiving culturally relevant health education (Glanz et al., 2015). Such education-based models are therefore employed in this project to evaluate how the health curriculum taught by nursing students impacted participating sixth graders. The impact of this project is discussed within the findings section of this paper.

At the request of the middle school, the PI initially met with teachers, staff, and the director of student life to identify eight areas of student-indicated health education needs.

The health education curriculum was then developed around eight identified areas: Hygiene, sexual health, drug and alcohol use, interpersonal relationships, online interactions, mental health, nutrition and exercise, safety and immigration, and was corroborated through a thorough review of literature focused upon needs assessments, health education curriculum for inner-city youth, and similar educational interventions by student healthcare providers (HEAP Literacy, 2017; Sherwood-Puzzello et al., 2007; Staten et al., 2005; Tompkins et al., 2005). The curriculum also incorporated evidence-based research for development of both format and content in order to keep students engaged and to deliver culturally relevant material (Kann et al., 2017). Movie clips, case studies and demonstrations were used to personalize the material whereby role-playing exercises actively engaged the students to practice skills necessary for healthy decision-making (Joint Committee on National Health Education Standards, 2007; Prochaska et al., 1992; Sears, 1992; Taylor & Woolley, 2013)

Project/Program Design

This project was approved by the university's institutional review board prior to the project implementation.

This study used a pre/posttest design (Tucker & Lanningham-Foster, 2015). This project acknowledges that nursing students are capable of educating young people about their health and assumes that prior nursing student preparation must include directions on what to teach and how to teach in order to be effective and have a positive impact on youth participants within this CBSL context. See Figure 1 outlining lesson preparation and post-lesson reflection. Teaching, however, entails more than mastery of a health topic and identifying gaps in understanding of that topic, especially when teaching vulnerable student populations. For this reason, direct faculty guidance is needed to provide nursing student teachers with educational tools, knowledge, and experience while they learn to educate others (Walter & Corbridge, 2018).

Lesson Plans and Expectations of Nursing Students

Lesson plans followed the same outline each week and were created in such a way that a nursing student would be able to understand the goals and measurable objectives of each lesson prior to class. Each written lesson plan began with an evidence-based rationale, corresponding goals which addressed how the material would influence knowledge, skills, and attitudes, and clearly defined and measurable objectives (Chatterjee & Corral, 2017; Furst, 1981). Preparation, materials, resources, and needed technology were also addressed, and all handout materials were supplied to the nursing student prior to class. Directions for how long to spend on each activity and how to close the class were also clearly expressed and evidence-based. Online Appendix

1 offers an example of a lesson plan outline and resources provided to the nursing student for teaching a lesson on personal hygiene. Similarly, structured lesson plans were also prepared to cover safety and immigration, alcohol and drug use, interpersonal relationships, online interactions, sexual health, nutrition and exercise, and mental health. Additionally, the sixth graders were given time at the end of each class to anonymously write down a health-related question or a comment. Such input was given to the nursing student teacher and incorporated as part of the nursing student's written reflection of the lesson that was subsequently submitted to the faculty advisor as input toward further development of the health curriculum.

The nursing student was asked to write a reflection after every class including what was effective, what was not effective, and what should be modified for future lessons. These reflections informed future lessons in two ways: by allowing the faculty advisor to write an introduction for the next lesson addressing student questions, and by modifying future activities to better fit actual group dynamics observed by the nursing students.

Procedures

This project was conducted from December 2017 to May 2018. The project began with one nursing student working as the health educator under the guidance of the PI (and nursing professor) on this project. As part of the implementation of the program, the nursing student attended 8 hours of training covering topics that prepared her to deliver the content required in the style determined to be most effective, while maintaining

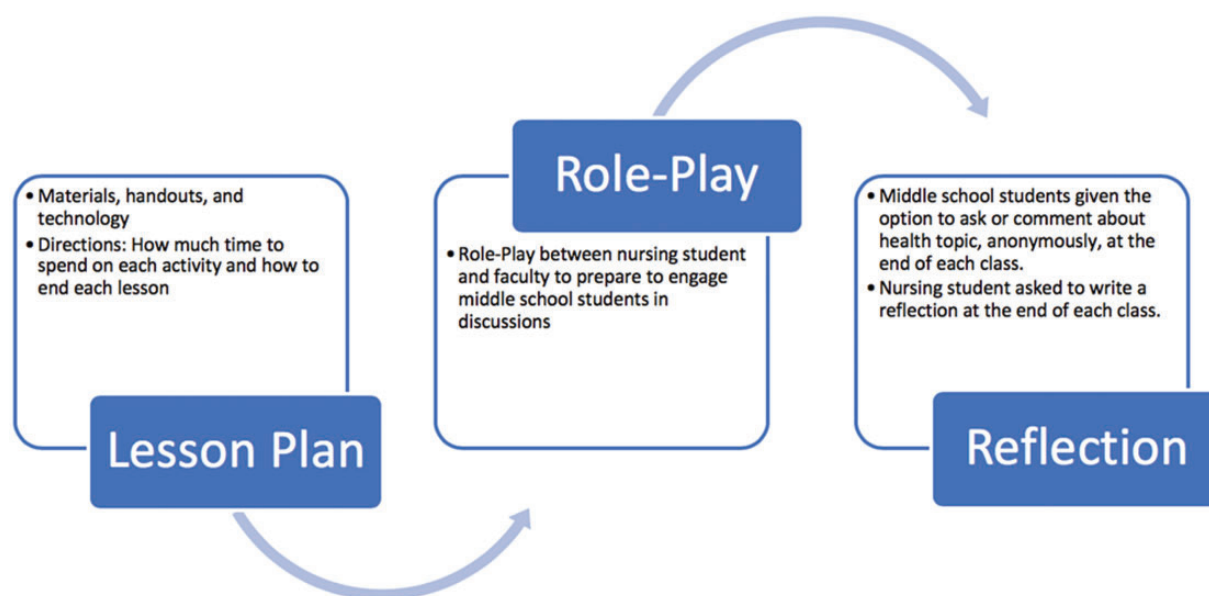


Figure 1. Lesson Preparation and Post-Lesson Reflection.

confidentiality and inclusivity that are paramount to project success. For example, prior to each class, the nursing student teacher and faculty would role-play to determine how best to engage students on such topics as the menstrual cycle, prevention of sexually transmitted infections, and hygiene. Concurrently, multiple online resources and weekly faculty mentoring were provided to the student nurse teacher ahead of class. Standardization of training and resources helped maintain consistency between the student educator and the content being taught.

Program Methodology and Implementation

The success of this program was assessed in multiple ways. Evaluation was completed using a mixed-methods pretest and posttest survey to assess students' sense of knowledge and capability related to their physical, emotional, and sexual health (Online Appendix 3). A pretest containing 38 multiple-choice and three open-ended questions was constructed to assess health-related knowledge, attitudes, and intentions of sixth grade students prior to the intervention. Knowledge was scored by calculating the proportion of participants who provided a correct answer. While there were no "right" or "wrong" answers regarding attitudes and intentions, it must be acknowledged that some attitudes support healthy decision-making, while others lead to higher risk taking, increased illness, and decreased safety. As such, healthy attitudes and intentions were also scored by calculating the proportion of participants whose responses endorsed attitudes and intentions associated with healthy behaviors. Open-ended questions were: (1) What challenges do you or your friends face that keep you from being healthy? (2) How do you get most of your health information? (3) What do you think kids your age need to know about their health? The curriculum was also tailored to address self-identified needs expressed by the sixth graders during the pretest to ensure that what they were taught was directly applicable to the issues they reported facing on a daily basis.

This pretest was administered to 25 out of the 30 sixth grade students in December 2017. Five students were

absent on the day of the pretest. Curriculum implementation began for all students in January 2018 and the posttest was administered to all 30 of the sixth-grade students in May 2018 following class completion of the curriculum. The pretest rated student knowledge of health-related concepts, including nutrition, exercise, puberty, hygiene, depression, alcoholism, and safety. Attitudes were assessed using survey questions pertaining to beliefs, judgments, and concerns about physical, and emotional health and safety. Intended behaviors were gauged through questions assessing the extent to which students planned to integrate recommendations provided in class into their daily lives.

While pretest and posttest survey questions were exactly the same, the open-ended pretest questions informed the curriculum while the open-ended posttest questions assessed whether learning needs were met. Ultimately, this pretest/posttest design sought to address whether there had been a significant change in the class as a whole regarding knowledge and attitudes and planned future behavior. The intervention was also assessed using cumulative feedback from middle school student participants upon course completion. Because the nursing student experience is integral to the success of CBSL, the student nurse was expected to submit detailed feedback after each session taught. The student nurse's written feedback varied in quality regarding what worked and what could be improved.

Data Analysis

Both quantitative and qualitative measures were used to evaluate the impact of the intervention. We analyzed the construct of knowledge, attitudes and intended behavior by creating bivariate measures on each question for the correct and incorrect response using a bivariate analysis. After tallying all completed quantitative responses, scores were generated for pretests and posttests. A dependent samples *t-test* was performed at this time (Chung & Lee, 2018) and Pearson chi-squared tests were conducted given the categorical nature of the data (Online Appendix 2). To obtain a deeper understanding of the collective experience of the sixth graders and to better evaluate the program, the qualitative analysis program NVivo (Erskine & Philpott, 2020) was used to analyze persistent themes among answers to open-ended questions on the pretest and posttest.

Results

(See Table 1) There was a significant change between pre-intervention, or Time 1, ($M = 14.32$) and post-intervention, or Time 2, ($M = 18.6$) expressed in correct answers for the tests overall (Online Appendix 3). Furthermore, seven of 33 questions were significant at

Table 1. Pre and Post-Test Results.

	Time 1 12/2017	Intervention 1/18 – 4/18	Time 2 5/2018
Correct answers related to...			
Bullying	20%		56.6%
Alateen	24%		80%
Alcohol and refusal skills	32%		63%
Exercise	40%		73%
STI prevention	48%		96.6%
Puberty and acne	52%		96.6%
Self-image	60%		90%

the $p < .05$ level for improvement toward health (Online Appendix 2). While the instrument itself was found to be imperfect and requires further modification and retesting, it still served as informative.

Additionally, we analyzed the qualitative responses. Students indicated they felt that junk food and lack of exercise were the main challenges preventing them from being healthy and that kids their age need instruction on how to be healthy and how to protect themselves. Of the 30 students that took the posttest, 28 responded that they felt this class helped their health. While many of the students' responses relayed the impact of the educational intervention, two quotes are particularly salient:

- Student A: "Yes this class helped my health because now I know what happens to my body so I am not scared. Thank you."
- Student B: "This class helped my health because it taught me how to be safe and avoid germs I could get. It also taught me that I don't have to do things I don't want to do because it's my decision and choice to what I think helps me become more safe."

Discussion

This project achieved its primary goal by demonstrating that it is feasible to develop an educational program with appropriate nursing student training that reinforces consistency in both content and format. The findings also suggest that implementing a culturally relevant health curriculum using a service-learning framework can increase knowledge in Latinx sixth graders while providing a service-learning experience for nursing students.

While CBSL is not unique to this Chicago-based university, most nursing programs do not require CBSL. This faculty/nursing-student/community collaborative process allows nursing students to apply their didactic learning in order to meet community needs. The requirements for student nurse preparedness, implementation and response to this project enhanced nursing student learning. It fostered understanding about community health and health education in a way that is not possible through classroom and clinical practicum experiences alone. The nursing students that led this program reported that this was their favorite hands-on learning experience, one that solidified a desire to work in adolescent health. One nursing student acknowledged how teaching middle schoolers required her to solidify her knowledge about a health topic and identify the gaps in her understanding of that health topic. The authors believe that CBSL should be implemented in nursing curriculums to provide more effective or beneficial learning experience for both student nurses and school age children.

This project helped to bridge the gap between one middle school community and one university and supports the partnership of these institutions. Foss et al. (2003) evaluated a public school–university nursing partnership and found that over time, the partnership became stronger when the participating organizations were flexible, creative, and responsive to program needs. Indeed, Mthembu and Mtshali (2013) concluded in an analysis of CBSL for nursing programs in South Africa, that knowledge construction occurs when there is interactive and collaborative learning between students, facilitators, and community members, all of whom have a role to play in the process. Kreulen et al. (2008) describe the development, implementation, and evaluation of a model for school district–college of nursing collaboration. They identified quality community-based nursing education, increased level of health services provided to school populations, and enhancement of school nursing practice, align as success markers, which support our findings and the importance of training school nurses on how to effectively reach this population.

Improvements to this program are necessary before its replication for use in grades seven and eight. Such improvements should address integrated, systemic, universal problems using an approach grounded in the holistic, culturally competent values that underlie both participatory action research and nursing practice (De Chesnay & Anderson, 2012; Olshansky et al., 2005; Wallerstein et al., 2018; Wallerstein & Duran, 2006). Structural barriers like poverty, increased violence in the community and parental language barriers which have prevented these middle schoolers from health-related information, services, and treatments can be directly addressed through a model of health education that is directly responsive to the stated needs of the population (Cheng & Mallinckrodt, 2015). The Theory of Reasoned Action acknowledges how the findings from this project could impact the health of the sixth grade participants because education has the power to influence beliefs, attitudes, intentions, and self-efficacy (Montano & Kasprzyk, 2015).

Limitations

The findings from this project suggest that the methods need to be improved for future implementation. Because the instrument was created at a sixth grade level utilizing the HEAP program, the students in the program were later determined from pretest and posttests responses to read and write at a third or fourth grade level (HEAP Literacy, 2017). While the information offered did align with their needs, the instrument used to assess their knowledge, attitudes, and intentions was written at a level that was too advanced. Because this was a pilot project and we wanted to preserve the anonymity of the

participants, the group was assessed as one whole cohort, which made it impossible to gauge individual student improvement between Time 1 and Time 2. Also, because this project sought to respect anonymity, no demographic data were included beyond the requirement that all participating students were in the sixth grade. Moreover, the evaluative component of the instrument was limited to pretest and posttest questions only, whereby student responses were limited due to poor writing skills. In the future, incorporation of interviews or focus groups may likely improve understanding. Additionally, use of a delayed intervention group would clarify how much improvement occurring between Time 1 and Time 2 can be attributed to the health class versus the passage of time (Higginson et al., 2006).

This project was also limited by inconsistencies of the nursing student's written reflections following each class session and the advisor's ability to modify future lesson plans according to the student's feedback. Upon completion of structured reflections, the nursing student felt more prepared for the next week. The student was asked to complete documentation of reflections immediately after class while the experience was still fresh. Such implementation only occurred approximately half of the time. At other times, the professor had to email reminders to the student nurse to request uploading of feedback. In the future, the student nurses should be required to fill out a specific form with check boxes and short-answer questions for completion within a specific time-frame. The quality of student nurse teaching would also be improved by the addition of a second teacher each week whereby such co-teaching would allow one student to address classroom management while the other could focus on delivering educational content (Jackson et al., 2017; Lai et al., 2018).

Implications for Practice and Research

This project adds to the growing body of literature illustrating that community-based service learning provides a means by which the community and nursing students benefit through an exchange of knowledge (Larson et al., 2011). This project shows how a CBSL program that provides culturally relevant health information to low-income, Latinx middle school students is both feasible as well as an effective tool for primary care prevention in "at risk" youth. Our program provided culturally targeted, community - informed health education to "at-risk" middle- school students on Chicago's South Side. Prior to beginning the intervention, the PI met with school faculty to determine the goals and each lesson ended with the option for the middle school students to write their thoughts and questions regarding health-care topics. Utilizing the participatory action research framework, each part of the process included the

community in the process of knowledge production. Ultimately, this project provides a means and baseline from which future or modified studies may stem.

The plan for this academic year is to revise the sixth grade curriculum and to develop seventh and eighth grade curricula that incorporate more games, snacks, and longer classes. Because this project identified a need for more nursing students during class time, six nursing students will be assigned to this school in the future so that two nursing students can focus on teaching each class at each grade level. Additionally, it will be important to modify the pretest and posttest instrument so that it more effectively assesses middle school student's health needs rather than their ability to take an exam. Furthermore, this researcher plans to engage more with parents in order to assess what health topics they want their children to learn. In-home interviews and focus groups with the children and their families would offer insight into families' real-life experiences and help identify the types of health information they would find most beneficial. Finally, moving forward, other nursing faculty will also be included in this project to serve as nursing student mentors.

Conclusion

This program has the potential to increase health literacy of middle school students and offer them tools to positively impact their life-long health behaviors. This project can transform the current health education initiative, which lacks sustainability, oversight, and organization, into a form that is repeatable, evidence-based, of high-quality, and amenable to consistent evaluation and improvement for addressing health needs of sixth graders. In the future, such a program will serve as an example for use in developing programs for other similar urban middle schools located within cities that host nursing programs requiring community engagement. By empowering middle school students and providing them with information and skills to advocate for and recognize the importance of their own health, a ripple effect may be created. This effect will potentially improve mental, environmental, and social health to ultimately improve human living environments across communities (de Heer et al., 2011).

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Supplemental Material

Supplementary material for this article is available online.

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