ORIGINAL RESEARCH

# Graduate student service learning in medically underserved communities

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## ABSTRACT

**Introduction:** This qualitative analysis aimed to ascertain the impact of community-oriented service learning experiences on community engagement of nurse practitioner students through the analysis of written student experience reflections. The UCSF Elev8 Healthy Students & Families project marked the beginning of an ongoing interprofessional academic-practice partnership in which health science graduate students have been assigned to service learning projects in school based health centers located in medically underserved neighborhoods.

**Methods:** Semi-structured self-reflections were collected from nurse practitioner and dental students between 2011 and 2015. Sixty graduate students provided written reflections before, during and after their service learning experiences. Dimensional analysis, a form of grounded theory, was employed as the primary analytic strategy.

**Results:** Several major processes were identified, including interprofessional learning and communication development. Tangible experiences with the social determinants of health proved centrally important to effective learning. Important conditions impacting the student experience were whether or not students were from or had experience in underserved communities and how they perceived the orientation/preparation.

**Conclusions:** This project provided valuable opportunities for growth as clinicians, including familiarization with community engagement, communication skills, interprofessional opportunities, and role modeling possible career pathways for community youth. Academic institutions partnering with community health sites for service learning should integrate thoughtful orientation to sites and community health topics. Finally, creating a space to discuss how a student's own personal background impacts their experiences is critical and may serve to enrich the opportunity for all students involved.

**Key Words:** Student service learning, School based health centers, Interprofessional learning or care, Dimensional analysis

## 1. INTRODUCTION

### 1.1 Context

The UCSF Elev8 Healthy Students & Families project was the beginning of an interprofessional academic-practice partnership that supported five middle school health centers located in medically underserved neighborhoods of Oakland, California.[1] From 2011-2014, faculty from the UCSF

Schools of Nursing and Dentistry collaborated with the Alameda County Center for Healthy Schools and Communities and partners in local Federally Qualified Health Centers (FQHCs), the Oakland Unified School District, and community-based nonprofit organizations to place advanced-practice nursing and dental clinical faculty and students in Elev8-supported School Health Centers (SHCs) for faculty practice, student clinical practicums and innovative quality

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improvement projects, population-level health screenings and other interprofessional service learning opportunities.

The goals of the project were to: (1) provide high quality physical, mental and dental health services, case management and chronic disease prevention and care to youths attending Elev8 middle schools; (2) engage UCSF students in interprofessional service learning opportunities including clinical practice, quality improvement and health education to youths and families;[2] (3) develop new models of financially sustainable and integrated health care service delivery in a school-based environment and lifelong learning opportunities for school-based providers.[3, 4]

## 1.2 Mission of Elev8 initiatives

Elev8 Oakland was part of a national initiative funded by Atlantic Philanthropies starting in 2007, including underperforming middle schools in high poverty neighborhoods in Baltimore, Chicago, New Mexico and Oakland, California. Elev8 used a community schools model that emphasized youth and family development, academic support within the school day and after school, and health care, including dental and behavioral health to improve academic outcomes of middle school students, with the ultimate goal of increasing high school graduation.[5] UCSF Elev8 was conceived and funded from 2011 to 2014 to support the quality and sustainability of the five middle school health centers in Oakland Elev8. These school-based health centers were located in medically underserved neighborhoods of East and West Oakland,[1] and provided a range of services, including confidential adolescent services, immunizations, physical exams, health education, behavioral health, and primary care for those students who did not have an outside primary care provider. Table 1 provides population-level data for all Oakland public schools. In comparison to the entire district, over 90% of youths in the Elev8 sites qualified for free or reduced lunch, and the majority of students in the sites were either Latino or African American. These clinics are part of a network of 29 school-based health centers in Alameda County, run by 5 different FQHC and one City Health Department, with coordination and additional support from Alameda County Health Care Services Agency.[6]

## 1.3 Elev8 activities and participation

UCSF Elev8 placed pediatric nurse practitioner (PNP) faculty in school-based health centers as primary care providers and sent teams of nurse practitioner (NP) and dental students to conduct classroom health education and provide screenings and preventive services related to oral health, body mass index, behavioral health, and sexually transmitted infections.

**Table 1.** Oakland unified school district demographics

| Oakland Unified School District Data for 2015-2016 | Percentages |
|---|---|
| Free and Reduced Lunch | 71.5% |
| English learner | 29.6% |
| Language other than English spoken in home | 50% |
| Chronic absenteeism | 12% |
| Hispanic or Latino of Any Race | 41.1% |
| American Indian or Alaska Native, Not Hispanic | 0.3% |
| Asian, Not Hispanic | 14.4% |
| Pacific Islander, Not Hispanic | 1.1% |
| African American, Not Hispanic | 27.4% |
| White, not Hispanic | 10.8% |
| Multiple ethnicity | 3.5% |
| Not Reported | 1.4% |

*Note.* Data from OUSD fast facts 2015-2016, lists percentage of students in the above categories: http://www.ousddata.org/announcements/new-fast-facts-2015-16-now-available

From the beginning of the Oakland Elev8 project to the present, well over 150 nursing and dental students have engaged in service-learning activities, both in the five Elev8 clinics and in similar sites in East and West Oakland. The population-level screenings have continued and expanded under the support of a Health Resources Services Administration Advanced Nursing Education grant (D09HP26958), with particular emphasis on psychosocial issues and obesity.

## 1.4 Elev8 initiatives and service learning

The UCSF Elev8 Healthy Students & Families project provided community oriented sites for student service learning as an alternative to traditional clinical rotations that place one student with one preceptor for an extended period of time. Service learning is a well-documented method of augmenting clinical rotations for health science graduate students, providing alternate venues for required clinical hours, teaching specific clinical skills, providing mentored opportunities for practicing cultural responsiveness and increasing commitment to future public service.[7–10] Student service learning projects had two objectives: (1) Increasing the capacity of school-based clinics to perform billable population-level screening through the use of student volunteers,[11] and (2) Increasing student learning through focused history-taking, assessment, and health promotion with diverse adolescents in a medically underserved setting.

In addition, these projects provided an opportunity to expand the number and capacity of sites for NP student primary care adolescent clinical experiences. Like many schools of nursing, UCSF was experiencing increasing difficulties in obtaining sufficient clinical placements for NP students.[12] Forsberg and colleagues attributed the relative scarcity of NP clinical placement sites to the increasing pressures on clinics to maintain productivity, challenges to both productivity and

student orientation after the transition to electronic medical records, increased competition between schools of nursing for limited sites, increasing preceptor mobility and burn-out, and lack of financial incentives for NP clinical sites.[12] Service learning has provided a direct benefit to clinic sites through capacity to reach a greater proportion of students at a school site, determine school-wide need for additional preventive services, and screen for psychosocial needs and risk behaviors. These service learning experiences using student volunteers also increase the billing capacity of the clinics on screening days, alleviating productivity concerns and providing an incentive for their continued use.[11]

Service learning has been shown to improve students' ability to apply what they learned in "the real world", reduce stereotypes, and facilitate cultural & racial understanding.[13] Service learning with vulnerable populations can increase students' perceptions of cultural competency and foster social change in nursing education.[14, 15] Evidence has also shown that in medical education, formal experiences with a marginalized population can positively influence student attitudes and change stereotypes.[16, 17]

Similarly, in a 2015 study of first year dental students participating in service learning programs, student reflections reported a heightened awareness of social health care issues, disparities, knowledge deficits, and patient differences as well as a focus on brainstorming solutions and improving how they professionally relate to the community.[10] Brondani also found service learning to help dental students better understand the unique challenges that vulnerable populations face. Service learning programs in dental education have also been found to shape attitudes, behaviors and future professional identity.[18–20]

Self-reflections done by students before and after community experiences are an integral part of their learning.[7, 21] The intended purpose of the self-reflections that were part of UCSF Elev8 service learning was to deepen the students' understanding of social determinants of health, working with youth across class, cultural and racial/ethnic differences, understanding the developmental issues of early adolescence, and interprofessional dynamics in community settings.

## 1.5 Academic competencies

It was hypothesized that placing NP students in service learning screenings would enhance their communication skills in general, provide practice in confidential adolescent history-taking, and increase awareness of the impact of social determinants of health on the youth with whom they were interacting. Students who were initially placed in service learning sites were dental students and NP students in the

following specialties: pediatric primary care, pediatric acute care, and family. Most recently, psychiatric mental health NP students have also participated in psychosocial screening events.

The National Organization of Nurse Practitioner Faculties (NONPF) publishes both overarching and population-specific competencies to guide nurse practitioner programs (See Table 2).[22, 23] In NONPF's population-specific guidelines, all four of the above specialties stress competencies in history-taking, use of developmentally appropriate screening tools, working with vulnerable and diverse populations, self-reflection and self-evaluation of one's own practice skills, and delivery of developmentally and culturally appropriate health counseling to patients and families.[23]

**Table 2.** NONPF core competencies

| |
|---|
| • Scientific Foundation |
| • Leadership |
| • Quality |
| • Practice Inquiry |
| • Technology Information and Literacy |
| • Policy |
| • Health Delivery System |
| • Ethics |
| • Independent Practice |

*Note.* Data from National Organization of Nurse Practitioner Faculties. Nurse Practitioner Core Competencies. Washington, DC: National Organization of Nurse Practitioner Faculties, 2014. (used with permission)

Faculty who collaborated with Oakland Elev8 SBHCs in organizing service learning experiences for nurse practitioner and dental students aimed to increase knowledge among these students about early adolescent development, oral health assessment and prevention, and to enhance social justice learning components in Dental and Nursing curricula.[24] They also aimed to detect health problems and promote protective factors in youth attending targeted middle schools. This paper extends the literature on service learning by delving into the process by which health science students learn from community based screening and health education activities; manuscripts about the impact of screenings on middle school youth are in process.

## 1.6 Purpose of the study

This study aimed to ascertain the impact of alternative community-oriented service learning experiences on community engagement of nurse practitioner and dental students through the analysis of written student pre- and post-experience reflections.

## 2. METHODS

### 2.1 Study design

This qualitative study used dimensional analysis, an approach to generating grounded theory.[25, 26] NP and dental students completed semi-structured written experience reflections that collected information before, during and after their service learning placement. See Table 3 for content areas queried in the reflections. They received either clinical or didactic course credit for their experiences, and completing the self-reflection was required for completion of the experience. The self-reflections themselves were not graded. The study received UCSF IRB approval as exempt.

**Table 3.** Self-reflection questions

| | |
|---|---|
| Pre-Reflection | Describe your expectations of the experience, including what you hope to achieve, any preconceptions you have about the site, and any challenges you anticipate about the experience. |
| | Describe your preparation for the experience, including any questions you have for your faculty, Elev8 or SBHC staff. |
| | Describe the potential benefits of this experience: a. To you as a health professional student, b. To children/families who receive the service, c. to the community/society on a broader level? |
| Mid-Reflection | Identify 2 to 3 areas where you feel you could use additional learning and guidance in order to be more effective. |
| | Identify three strengths you are displaying in your service placement. |
| | In your experience, what are the social determinants of health that have most affected the children and adults you are serving? |
| Post-Reflection | Briefly describe your service learning experience, what you did, specific setting, whether with children or adults, and the age/grade level of youth you interacted with. |
| | What have you observed about adolescents' (middle school/high school age), social interactions and their cognitive/ social developmental level? What did you observe about their educational skills relative to their grade level? |
| | How did preparing for and teaching health education increase your own knowledge? What went well, and what was challenging? Did you learn anything about adolescent development that will help you deliver health teaching to this age group in the future? |
| | Describe interprofessional interactions you experienced in this setting. Describe challenges and barriers, as well as facilitators to working with other health professionals. Identify 2 ways to support or enhance interprofessional collaboration in this setting. |

### 2.2 Sample and setting

Students were placed in a variety of clinical sites, including the five Elev8 sites, primarily in East and West Oakland. Self-reflections were collected from NP and dental students. NP students represented both first and second year students, dental students were taking a second year elective course. Fifty-nine graduate students provided 100 written reflections before, during and after their service learning experiences from 2012-2014 and 2015-2016. See Table 4 for the distribution of students across specialties.

### 2.3 Analysis

Data sources included the written student reflections. Dimensional analysis (DA), an analytic approach to generating grounded theory, was employed as the primary analytic strategy.[25] In DA, the analysts dimensionalize or break down a phenomenon's complexities into components, or dimensions, to understand what all is involved in a phenomenon. The authors coded transcripts initially using an open coding process,[26] and these initial codes were defined, compared, combined and collapsed to reach higher order conceptualizations, known as dimensions. The relationships between the emerging dimensions were then represented in an explanatory matrix that organizes all dimensions as context (the environment and setting), condition (those that impact the process), process, or consequence (the outcomes of the process).[25] Different processes are evaluated and the one with the greatest explanatory power is utilized during the final phase of data integration.[25, 27] Atlas.ti, a qualitative software program, was used to manage analysis.

**Table 4.** Student self-reflections by specialty

| Specialty | Numbers |
|---|---|
| Dental | 7 |
| Family NP | 12 |
| Pediatric NP- Acute Care | 14 |
| Pediatric NP- Primary Care | 23 |
| Psychiatric Mental Health NP | 3 |
| TOTAL | 59 |

*Note.* NP = Nurse practitioner

## 3. RESULTS

The students' post-reflection comments were largely positive and our analysis confirmed an overall enthusiasm for these innovative clinical placements. Students identified several processes that enhanced their education, including interprofessional learning and development of communication skills

with early adolescents. Of all these, the process that most clearly framed their learning experience was that of tangible experiences with social determinants of health. When students heard directly from middle school youth about the impact of stressors such as living in dangerous neighborhoods, lack of access to healthy food, being homeless or having an incarcerated parent, their self-reflections described their efforts to reframe their health promotion messages and to seek guidance from clinic staff about school and community resources. See Table 5 for the matrix that organizes all dimensions of the process.

**Table 5.** Dimensional analysis matrix

| Context | Conditions: (Facilitate/Block process) | Process: (Actions/Interactions) | Consequence: |
|---|---|---|---|
| -Cultural awareness -Racial and class discourses -Purpose for joining health science field | -Orientation/ preparation to experience -Familiarity with community -Prior exposure to adolescents from underserved communities | -Tangible experiences with social determinants of health | -Greater commitment to civic engagement -Re-orientation to purpose of studies -Role modeling -Introduction to job opportunities -Meeting academic competencies |

### 3.1 Context

These service learning experiences were impacted by several contextual features including (1) students' own awareness of cultural differences and their impact on learning and health; (2) wider societal discourses on race and class and its influence on young people, their education, and their health; (3) the purpose and reason the graduate students joined a health science profession including their motivation and their post graduation goals. These dimensions set the stage for the graduate students to engage in the service learning opportunities that resulted in the primary process of experiencing how social determinants of health impact young people in terms of their health education, access, interest, resources, and knowledge.

### 3.2 Conditions

Certain conditions facilitated or blocked the central process of how students experienced social determinants of health including how well student were oriented to the setting and/or how well or poorly they were prepared for their specific project as well as their own familiarity with the community or similar communities. Their prior exposure to adolescents, adolescent health topics, communication with the population and comfort and experience providing care to this age group all set the stage for how they interacted with the youth and how they reflected on their own student learning.

#### 3.2.1 *Familiarity with community*

As might be expected, the student's personal background influenced their experience, including whether or not they came from a similar community, were familiar with a similar community before they entered their graduate program or identified with the youth population in some way. By and large, students from Oakland or from similar communities described feeling more comfortable in placements at Elev8 sites and felt they "knew what to expect" in terms of the population and their needs. Students from the same or similar communities focused on how their similarities to the student population were a source of strength as a future practitioner. For example, one young man said,

> "I feel I was able to establish rapport in a relatively short amount of time... I can provide similar background stories to the immigrant children, having been an immigrant child struggling to learn English myself."

Others highlighted the unique challenges of high poverty medically underserved communities and the potential of their benefitting from the Elev8 health interventions. For example, reflecting on nutrition education and nutrition projects in the community, one student said,

> "Hopefully the farmers market comes to fruition and the community has more options for nutritious food. As someone who used to live in the area and eat a lot of [fast food] because that is what was available, I know how crucial that is for the health of the whole community."

For many of the participating health science students unfamiliar with the communities where they were placed, the anticipation of working with youth from diverse and lower socio economic communities was presented as an expected challenge and difficult aspect of their service learning experience. Some highlighted their own discomfort, "It was challenging to relate to the urban culture because I don't have much experience with that." Others focused more on their worries about not being effective in their student role:

"I anticipate the challenges of social and economic factors to be present in these kids which is very hard. When you hear some of the things these children deal with it, it is hard to understand how can you possibly have any influence on their situation."

Some students reflected on their awareness of racial differences between themselves as health science students and the youth they were working with, commenting,

"I certainly noticed when I was in the office, in the classroom, in the hallway, that I was usually the only white person. When I was in their classroom, I'm sure they noticed too... and I honestly don't know what that meant for the students (or what I wanted it to mean)."

For some students, the service learning experience reflections provided a safe space to explore their assumptions of underserved communities; others gained the experience of working in settings that exposed them to racial, class, and social differences and they had an opportunity to reflect on how those differences impact youth and their health.

### 3.2.2 Preparation/Orientation

Students reflected on conditions that were specific to their particular service learning assignments. For many, their personal confidence in their knowledge of their service project topic, their comfort in teaching, and their general feeling of either being prepared or unprepared for the experience were aspects that either facilitated or blocked their learning process. They commented on the importance of advance preparation of their teaching topics and having onsite orientation.

Some students prepared by reviewing online modules and reviewing materials from previous courses or materials sent by faculty. Others stated the most helpful preparation was *"meeting early as a team to further discuss our approach with the dental students."* Some felt underprepared, as in this example in which a students stated that ninth graders:

"...reported having never had any sexual health education, even in regards to the anatomy and physiology of their own bodies. We could have given a much better presentation, had we known this information."

Students commented on the importance of both preparation of what they would be teaching and the onsite orientation to both place and population. Students discussed the importance of orientation in many ways: how it impacted their

expectations going in, how it supported their educational goals and also how it shaped their interactions with youth.

Other students reflected on the need for orientation specific to the overall picture of service at the site:

"It would've been helpful to understand more of the programs in place at the school ...or a better idea of what the health educator covers at the clinic, to have a better idea of the big picture of care these kids are receiving. This could reduce possible duplication of care or/and present the ability to make connections between interventions to make them more effective."

Some students greatly benefited from the on site orientation by their clinical preceptor and also direct support during clinical interactions regarding the resources available to them and their role as students and health educators.

"Having a base understanding of the service we are providing to these adolescents was very important. Initially, I worried about how to address any concerns that might arise during the screening process, but was reassured by the PNP in the practice that the context of the screening is to ensure that any student with problems or concerns is appropriately plugged into referral services and to give these children an opportunity to experience the supportive environment in the clinic (so that even if they choose not to disclose, they know the service exists). Remembering the context helped me relax and focus on relating to the children I screened."

### 3.3 Process

The process of "Tangible experiences with social determinants" describes graduate student experiences where they had an opportunity to integrate theoretical knowledge with clinical situations. This included situations that brought up issues of diversity and culturally responsive care and assumptions and realities related to working with under-served populations. Students in prolonged placements were asked halfway through their service learning experience to reflect specifically on what social determinants they felt were impacting the youth they were working with. Student reflections included:

"...dealing with this population in West Oakland, many issues related to socioeconomic factors can be overwhelming at times. Kids with no structure or good role models, financially struggling families, families affected by violence in the community, just to name a few."

> "Poverty impacts every child I see at SBHC site and since I have only seen racial minorities, racism most certainly impacts into their situations on a broader level. I often have to re-assess my most basic clinical inclinations, like suggesting they eat or promoting exercise, because there may not be food in the house or a safe place to play."

Students often described ways in which they needed to tailor their interventions and teaching to reach the youth populations. Sometimes it was in reference to their developmental stage, their maturity in discussing topics, such as sex or hygiene, but often it was framed around how health education and intervention can be more culturally appropriate. One student described how a group of minority students who participated in their health education project were very surprised to learn that:

> "Latinos and African Americans were at a higher risk for developing some of the health problems that we talked about and I think putting it in that context made the information more real to them."

Students reported not only positive changes in their own ability to communicate with young adolescents, but an overall increased awareness of the impact of social determinants on the health and education of the youth populations they worked with.

### 3.4 Consequences

The consequences for the graduate students expressed increased commitment to civic engagement and public purposes and, for those who entered graduate school in order to be able to work in underserved communities, it provided a re-orientation to the purpose of their studies. For those not familiar with underserved communities, the experiences were an introduction to possible future work settings, and for all graduate students, the service learning experiences allowed them to role model possible career pathways for community youth.

Many of the screening and health education experiences were offered relatively early in the nurse practitioner or dental program, while students were actively learning history-taking and advanced patient assessment skills.

> I felt that doing these screenings in person really helped me learn how to ask questions to elicit responses from this age group. I felt it also gave me a new level of confidence in assessing risk behaviors in this age group. I know

these are skills I will use in my future practice. The only challenge was just my comfort level in interacting with this age group and asking more sensitive questions, but... the repetition and the ability to refer students to counseling services helped assuage my concerns and boost my confidence.

It was common for students to reflect on how working with under-served populations would impact their education, their professional identity and fulfill a dedication to community service. A common thread regardless of student personal background was the appreciation of the opportunity to learn more about the community and the specific needs of the population. Students unfamiliar with under-served communities hoped to become more "culturally competent" through their service learning experience, while students who described their own childhood community as under-served often referred to giving back to the community as one of their goals when they decided to work in a health profession.

The service learning opportunity provided students a space to accomplish their goals and become re-energized in their dedication to serving diverse communities. One student who grew up in a similar type of neighborhood to the one where she did her clinical placement said a potential benefit of this service learning opportunity was to:

> "Be reminded of the neighborhood I grew up in and the challenges I had as a preteen in these areas. Constantly being reminded of the inequalities will keep me more on my game and realizing the reason why I came into the field in the first place."

Many students reported how the service learning opportunities in under-served communities served to enhance their skills as clinicians by appreciating the complex world in which youth and their families live:

> "This experience has helped me to consider the social context of people's lives when I work with them as a future NP. I feel like there is a lot that occurs in the students' lives that teachers and other adults in their lives are not aware of. Youth may not disclose that information because they do not feel comfortable or do not think that it will make a difference because they have accepted their circumstances as a part of life. Some of the students seemed to have low expectations for what their futures would look like and it seemed like they felt like there were limited options for their lives after high school.

Others, however, seemed very motivated and engaged in school despite the social and environmental context of their lives, which may lack parental/familial support and encouragement and/or resources. Overall, this experience helped me to be more conscious of patients' social context and not just their medical history/information."

## 4. DISCUSSION/CLINICAL IMPLICATIONS

### 4.1 Service learning in general

This project highlights different ways in which alternative community oriented sites for student service learning can impact graduate student education. Service learning provides valuable opportunities for growth as clinicians, including familiarization with vulnerable communities, civic engagement, communication skills, interprofessional opportunities, and modeling possible career pathways for self and community youth. This study supports prior research that indicated participation in service learning was associated with increased self-awareness, attitudes toward school and learning, civic engagement, and social skills.[7] Although we were not able to measure how brief service learning experiences differ from a traditional clinic placement in an underserved community, these screening and health education assignments enabled us to expose many more students to a site than would have been possible under a traditional clinic rotation.

In this study, all students, regardless of background, learned specific psychosocial, assessment and preventive skills included in NP competencies for working with children and adolescents.[23] However, students who came from or lived in underserved communities had a different learning trajectory around social determinants of health from those students who had less previous exposure. They came to the experience with a more personal understanding of the social conditions in the school settings and their learning involved an awareness of how this impacted their ability to connect with youth in underserved settings and a deepening of their commitment to give back to their communities. This difference in learning trajectories is not surprising; however, the juxtaposition of reflections from students who are new to poor and underserved communities with those of students who grew up in them has led us to explore how classroom discussions after the post reflections could take the learning even further. Individual reflections on poverty and racism could evolve into a more complex understanding of the impact of structural inequality on the health of the communities in which the service learning projects were situated.[14] Similarly, student disappointment at the lack of ninth graders' sexual health knowledge or the failure of a lesson, for example, could be

reframed as a positive experience in student learning from youth and gaining valuable information for future encounters.

Nursing literature has acknowledged the importance of diversity in the nursing workforce and the challenges culturally diverse nursing students face in academic settings.[28] However, to our knowledge the literature has not specifically addressed the added value of involving diverse students in community service learning and the ways in which these strengths could enhance classroom discussions after the experience has been completed. Our findings support the expansion of a larger conversation in education of how to evolve teaching modalities to be responsive to classroom diversity and how students can personally grow and best learn from each other.

This study supports the inclusion of assignments such as a pre/post-experience classroom discussion designed to unpack these and other differences in community learning.[29, 30] Explicit examinations of knowledge, experiences and various societal discourses may serve to make underlying assumptions more visible and enrich the opportunity for all students involved. It has been found that educators were not well prepared to teach about race, racism, and antiracism in nursing.[30] These topics should not fall within the purview of culturally diverse students given the risk for fatigue or frustration that may happen when this teaching responsibility is placed on their shoulders. When students from diverse backgrounds participate in communities with vulnerable populations and are exposed to ways that access, power, knowledge, disadvantage, and background impact health and education, faculty must be prepared to introduce and integrate these topics in meaningful ways.[29–31]

### 4.2 Self-reflections as a tool

Written self-reflections are a valuable tool that can help students move beyond merely documenting their reactions to the experience and facilitate professional growth by building capacity to examine their own learning.[32] Self-reflection and critical thinking are themselves part of core Leadership competencies endorsed by the National Organization of Nurse Practitioner Faculties.[22] In this study, the reflections provided a place for students to critically examine their development of knowledge, skills, abilities, values and interest in making a difference in one's community.[21]

### 4.3 Considerations for implementing service learning opportunities

When considering the integration of service learning opportunities, academic institutions partnering with community health sites for service learning should integrate thoughtful orientation to sites and community health topics. Our findings support other work that shows students benefit from

both content expertise, and preparation in terms of knowledge about the site, how they work, referral options, etc.[33] Because many service learning opportunities are short term, orientation and preparation are paramount to maximize the benefit. Similarly knowledge of post-screening follow-up and referral procedures helps decrease student anxiety and increase their appreciation of their role in the process.[14]

Finally, the role faculty play has been specifically highlighted as an important facilitator or barrier to student experiences.[34, 35] Therefore, while it may take faculty extra time to arrange these experiences, faculty and institutions should not underestimate the potential impact of student service learning opportunities as a way to give community based experiences to graduate students in various tracks of health career education. And although it may be challenging to arrange classroom discussions if only a small portion of the class is involved in each experience, the potential benefits suggest that these discussions should be incorporated as well.

### 4.4 Limitations and future directions

The service learning experiences fulfilled clinical hours for the nursing students and a course elective experience for the dental students. As a newer addition to clinical experiences, tracking of student adherence to requirements for pre- and post-reflections was inconsistent across programs. During the years that the reflections were recorded, a majority of students did post reflections across specialties, but it was not possible to track significant differences in the experience reactions between those who did and did not submit reflections. In addition it was possible that students presented a more positive and sanitized version of their reactions when posting reflections on a course web platform. As is typical of qualitative research, we used a purposive sample of volunteers, so made no claims to a representative sample.

However, in qualitative research, the quantitative criteria of internal and external validity or reliability do not apply. Instead researchers aim to present a "credible" and "authentic" portrait of participant experiences, with the representation of multiple voices.[36] The pre- and post-reflections were neither graded nor corrected, and we saw a multiplicity of attitudes expressed, including students grappling in sometimes awkward ways with their experiences of being the other in a new setting and of being a novice health professions student.

Additionally, while the impact of service learning on actual academic performance was not addressed, a thoughtful presentation of how service learning experiences can be used to achieve various academic competencies was included. Of note, a recent systematic review in nursing education recommended that future research of service learning should include an identification of the anticipated effects of the service learning project together with the use of standardized instruments for measuring project outcomes.[37] In our nurse practitioner programs, we are formalizing community-based service learning and other single experiences into a discrete clinical course, with dedicated faculty time independent of grant funding. Course organization and assignments will be informed by the findings of this study, including the thoughtful inclusion of classroom discussions.

## 5. CONCLUSION

This project highlighted important aspects of graduate health science student service learning. The project also helped increase sustainability of school-based health centers in medically underserved communities by providing skilled health science student assistance in outreach,[11] and exposed urban youth to health-oriented science curriculum and graduate student role models. Finally, the project helped increase the cultural responsiveness of the future health professions workforce by engaging larger numbers of nurse practitioner and dental students in clinical practice in underserved communities.

### CONFLICTS OF INTEREST DISCLOSURE
The authors declare that there is no conflict of interest.

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