



Harmony in Healthcare

A Student-Run Free Clinic's Approach to Enhance Clinical Education through Interprofessional Collaboration and Patient Centered Care

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Abstract

Background: Although prior studies have demonstrated the value of multidisciplinary, student-led clinics in improving healthcare accessibility, fewer have explored how these models concurrently influence early clinical education across multiple health professions. This study aims to examine the impact of a free clinic's interdisciplinary approach on both community healthcare access and the professional development of student volunteers, offering a framework for institutions seeking to integrate experiential, team-based learning into their curricula.

Methods: 136 students from multiple midwestern universities, who had volunteered at least once at the Near West Free Clinic (NWFC), participated in a mixed-methods survey. Quantitative data were analyzed based on mean and standard deviation and plotted on various charts to demonstrate significant results. Qualitative responses were analyzed through thematic analysis to gain additional insight.

Results: Students reported the highest level of agreement that volunteering at NWFC enhanced clinical skills, heightened awareness of social determinants of health, increased comfort in working with other disciplines, and motivated them in their studies.

Conclusion: As universities look to enhance the medical education model to train students in an interdisciplinary manner, community clinics may be a solution that strengthens the foundation of future healthcare professionals, while serving the needs of the public.

Introduction

The landscape of healthcare in the United States (US) has been marked by disparities in access and affordability, particularly affecting under-resourced communities. These communities face compounding challenges making it difficult to maintain and improve public health. A combination of deficiencies in resources, overwhelmed clinics, staffing shortages, delayed access to specialists, insufficient mental health professionals, low supply of interpreters, and long wait times for appointments create the initial barriers to care. Even when all these obstacles are overcome, transportation issues, income inequality, and lack of insurance coverage create secondary barriers to care. The US Department of Health and Human Services identified these healthcare accessibility gaps, referred to as social determinants of health (SDOH), as critical public health threats. SDOH improvement has further been escalated to one of the five overarching goals to be accomplished by Healthy People 2030.¹ According to the US Census Bureau, 8-10% of the population was uninsured in 2023, these rates were higher in historically marginalized communities, such as Hispanic children

(19%).² These disparities and healthcare barriers have shown to be increasingly prevalent throughout the nation.^{3,4} In response to these challenges, student-run free clinics (SRFC) emerged as vital initiatives to bridge gaps in healthcare accessibility while providing valuable training opportunities for future healthcare professionals.

This article focused on the above discrepancies in an urban midwestern setting - Indianapolis, Indiana. The data collected in the Health Equity 2018 report from Marion County, located in central Indiana, supported the need for the many of the aforementioned services. Marion County (15%), and Indiana as a whole (11%), had a higher prevalence of adults without healthcare coverage than the national prevalence of 8-10%.⁴ The prevalence of chronic conditions, such as asthma, diabetes, and hypertension in Marion County and Indiana was also greater than the national prevalence.⁴ In addition, there was a gap in receiving comprehensive healthcare in Marion County; 41% of adults in 2016 reported having a dental visit in the past year, which was lower than the state and national prevalence (62% and 63%, respectively).⁴ In recognition of existing healthcare disparities, the Near West Free Clinic (NWFC) was established in 2017. Clinic founders collaborated with a community steering committee to better understand local needs, secure advertising partnerships, and ensure alignment between clinical services and community needs. The primary mission had two objectives: 1) to provide comprehensive, patient-centered care to the under-resourced population; and 2) to furnish an experiential and collaborative interdisciplinary learning environment for future healthcare professionals.

NWFC began with a core team of an attending provider, medical and physician assistant (PA) students, and a local pharmacist with pharmacy students. Physicians, PAs, and Nurse Practitioners (NP) would receive community-based training and sign up for the Health Care Volunteer Registry prior to becoming an attending. First-year PA and medical students were involved in gathering patient vitals and histories while more clinically experienced students took on roles in patient evaluation and treatment planning under the supervision of attending providers. As the patient population grew, the ancillary services expanded to meet the comprehensive healthcare needs of the community. Physical therapy students, occupational therapy students, and athletic training students joined the clinic team to provide support for musculoskeletal care and rehabilitation. Lab partnerships provided point of care testing and result interpretation. Access to affordable on-sight medications allowed for immediate counseling and initiation of pharmacotherapy.

As patient volume and complexity increased, NWFC leveraged a diverse interprofessional team to accommodate the ever-changing needs of the community. The ability to work collaboratively in an interprofessional team is an outlined expectation of graduates from many healthcare professional programs as cited by various accrediting bodies, including the Accreditation Commission on Colleges of Medicine, American Osteopathic Association, Accreditation Review Commission on Education for the Physician Assistant, and Accreditation Council for Pharmacy Education.⁵⁻⁸ Studies over the years have demonstrated the positive impact interprofessional experiences have on healthcare professional students.⁹⁻¹¹ A study on medical students' perspectives on interprofessional learning by Zechariah and colleagues noted a majority of medical students valued the ability to provide comprehensive patient care and efficiently work within a multidisciplinary team. This study also identified that the preferred method of interprofessional experience was through clinical simulation.¹⁰

Although prior studies have demonstrated the value of multidisciplinary, student-led clinics in improving healthcare accessibility, fewer have explored how these models concurrently influence early clinical education across multiple health professions. This paper examined NWFC's impact on healthcare accessibility and medical education. It contributes to the growing body of evidence supporting student-led healthcare models as viable solutions to health disparities. Additionally, it provides evidence of the benefits of experiential learning through a multidisciplinary approach with a combination of qualitative analysis and quantitative data. As academic institutions may look to adopt similar frameworks to expand their medical education, this study shows how the multi-

disciplinary student led model can be used to foster the next generation of compassionate, competent healthcare providers.

Methods

Participant and Site Description

The study population included all students who served as a volunteer at NWFC between January 1, 2020, to June 6, 2024. The NWFC volunteer database was used to retrieve email contacts from registered volunteers. Eligible individuals were invited to participate via email. Inclusion criteria included volunteering within the selected time frame, volunteering in a position allocated to graduate or undergraduate students only, and providing a working email address. Exclusion criteria included volunteer experiences outside of the selected time frame and individuals in the database registered under job titles allocated to working professionals only, such as clinic supervisor or pharmacist. Participation in the survey was optional, and all responses were anonymous. Invitations were sent to 633 eligible past and present graduate and undergraduate students, with two reminder emails spaced one week apart. A total of 136 individuals responded to the survey (21.5% response rate). Respondents reported attending one of several private midwestern universities at the time of volunteering. Participants included students receiving an education in Doctor of Osteopathic Medicine, Master of Physician Assistant Studies, Doctor of Physical Therapy, Occupational Therapy Doctorate, Master of Science in Athletic Training, or various bachelor's degree programs.

Data Collection and Measurement

The primary objective was to describe the impact of interdisciplinary clinical work on healthcare professional student learners' perception and knowledge of interdisciplinary clinical roles. The authors conducted an unpiloted mixed-methods survey to collect data. Twenty-four multiple choice questions and Likert scale statements (1=Strongly disagree to 5=Strongly agree) were created using the Qualtrics survey system (Qualtrics, Indianapolis, IN). Multiple choice questions inquired about demographic information of participants, such as gender identity, race, ethnicity, Spanish fluency, volunteer frequency, and the type and year(s) of education or training. Likert scale statements were categorized into four overarching themes, addressing the impact of NWFC on experiential learning, SDOH, interprofessional interactions, and the mental health of student volunteers. The survey also collected qualitative responses in the form of three free responses relating to specific experiences at NWFC. These inquired upon how volunteering impacted student's understanding of holistic care and their personal development as future healthcare providers. The authors developed survey questions through student and provider interviews, previous author experiences, and literature review.¹¹⁻²⁰ The following study protocol was reviewed and approved for Exempt Category 2 status by the Butler University Institutional Review Board.

Data Analysis

Upon closure of the voluntary survey, individual responses were exported from Qualtrics and analyzed. Data was sorted into demographic information, Likert-scale data, and free-responses. Results were then totaled and reported as descriptive statistics. Likert scale data was grouped into four themes relating to the content of the survey questions: experiential learning, SDOH, interprofessional interactions, and mental health. Questions attributed to each category were analyzed and reported together. Data was graphed, by theme, into four comparative stacked bar charts. Free response data was stratified by question. Each of the three free-response questions were assigned to one of the authors of the paper. Authors read and coded each response to their assigned question, identifying common themes. Through thematic analysis, authors compared their findings and created succinct descriptions of the themes. Direct quotes from free response questions were cited as supplemental material when indicated. The themes and quotes were displayed in a table format.

Table 1. Demographics of student volunteers stratified by program of training

Role	N	%
Medical Student	68	50.0
Physician Assistant Student	42	30.9
Physical Therapy Student	4	2.9
Athletic Training Student	7	5.2
Undergraduate Student	8	5.9
Other	7	5.2
Occupational Therapy Student	2	1.5
Biomedical Sciences Master's Program	2	1.5
Pharmacy Student	1	0.7
Unspecified	2	1.5

Demographics of student volunteers stratified by program of training. Respondents specified what educational program they were enrolled in at the time of volunteering.

Table 2. Student volunteer demographics

Characteristic	N	%
Gender Identity		
Male	36	26.5
Female	99	72.8
Non-binary / third gender	1	0.7
Self-Reported Race		
American Indian or Alaskan Native	0	0.0
Asian	8	5.9
Black or African American	6	4.4
Multiple Races/Other	8	5.9
Pacific Islander or Native Hawaiian	0	0.0
White or Caucasian	109	80.2
Prefer not to say	5	3.7
Self-Reported Ethnicity		
Hispanic or Latino	16	11.8
Non-Hispanic / Non-Latino	118	86.8
Prefer not to say	2	1.5
Spanish Fluency		
Yes	26	19.1
No	110	80.9

Self-reported demographics of student volunteers stratified by gender identity, race, ethnicity, and Spanish fluency. Demographic data is reported from the time of volunteering.

Results

Demographic Data

Out of the 633 student volunteers invited to complete the survey, 136 individuals elected to participate, for a response rate of 21.5%. Of the 136 students surveyed, 50.0% were medical students and 30.9% were PA students. Other responses: 8.1% PT or Athletic Training students, 5.9%

undergraduate students, and 5.2% other categorized students (occupational therapy, biomedical sciences, pharmacy, etc.) (Table 1 & Table 2).

Quantitative Data

Of the 136 respondents surveyed, the majority of students returned more than once to volunteer at NWFC (83.1%) and 44.9% of students reported they volunteered at the NWFC at least 5 times. (Figure 1).

Students were questioned on how NWFC impacted their experiential learning. Volunteering at NWFC helped reinforce respondent’s classroom-taught understanding of medical conditions, according to 91.4% of respondents. Students also agreed or strongly agreed that their time at NWFC boosted their efficiency, improved their staffing ability, and enhanced their confidence on clinical rotations (93.0%, 89.8%, and 89.8% respectively). (Figure 2)

Students reported on the impact NWFC had on their understanding of SDOH. More than 93% of respondents agreed or strongly agreed that their participation in the clinic increased their awareness of SDOH, helped them become a more inclusive provider, challenged them to provide better care for under-resourced communities, and allowed them to provide patient centered care (Figure 3).

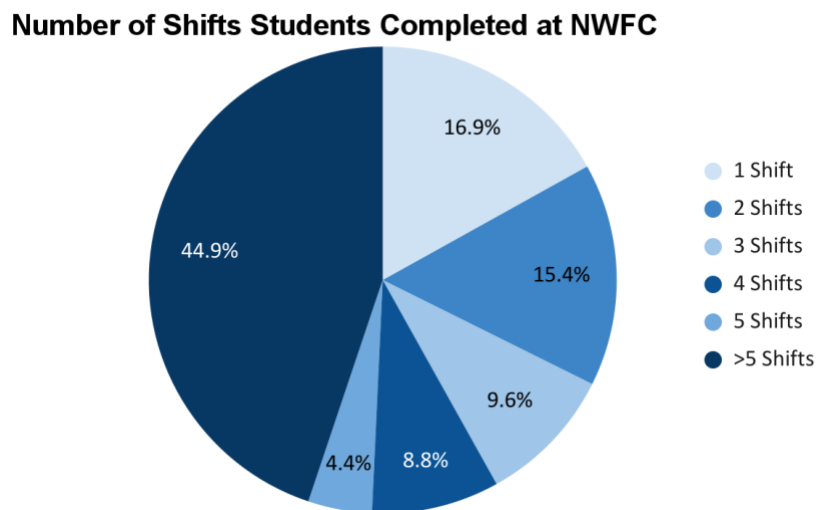
Interprofessional interactions were evaluated in the survey. After volunteering at the free clinic 84.3% of students felt more comfortable initiating conversations with other disciplines outside of their own (Figure 4).

Students emphasized that NWFC boosted their overall mental health and renewed their drive towards their career. Nearly 83.6% of students either agreed or strongly agreed that caring for patients impacted their mood and overall mental health, while 96.9% of respondents agreed or strongly agreed that NWFC reaffirmed their passion for their career and motivated them in studying (Figure 5).

Qualitative Data

Students described the importance of an interdisciplinary environment for delivering comprehensive patient care and for deepening their understanding of each profession’s role. Encounters with underserved patients regularly highlighted the impact of social drivers/determinants of health, strengthening students’ ability to provide holistic care.

Figure 1. Distribution of the frequency of volunteering by respondents.



Distribution of the frequency of volunteering by respondents. Participants reported the number of shifts they completed at Near West Free Clinic (NWFC).

Many also reported increased confidence, ownership of clinical decision-making, and a clearer sense of their developing identity as future healthcare providers. Of the 136 student participants, 52.2% (n=71) provided narrative responses to open ended questions (Table 3).

Discussion

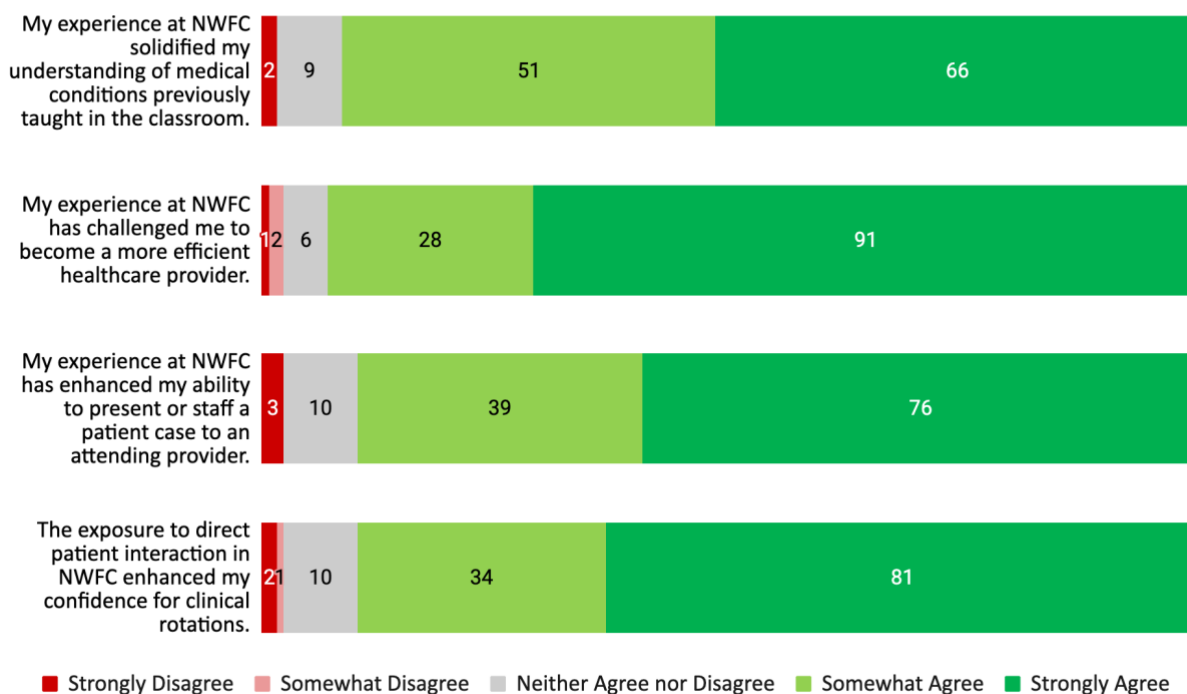
Medical education has historically been structured with two major components to make up its curriculum: an initial classroom-based didactic component followed by hands-on experiential learning. In a majority of healthcare professional programs, direct patient-facing experiences do not happen routinely until the scheduled clinical experiences towards the end of curriculum.

This study demonstrates the benefit of intentionally incorporating experiential learning into the didactic phase. Students reported that volunteering at a free clinic enhanced their confidence and efficacy as a practitioner and solidified their understanding of didactic concepts previously taught in the classroom. These findings are in agreement with the findings of Tran and colleagues who identified trends in improved self-efficacy and comfortableness of medical students volunteering at student-run free clinics.¹⁷

An additional cited benefit of volunteering included the competency and comfort students had regarding their interprofessional interactions. The presence of a variety of healthcare professions at NWFC uniquely contributed to this outcome. For instance, medical and PA students in a clinical environment may be accustomed to sending a prescription to the pharmacy without much interaction. In this setting, however, the students were better able to appreciate a pharmacist dispensing medication and counseling the patient in the clinic.

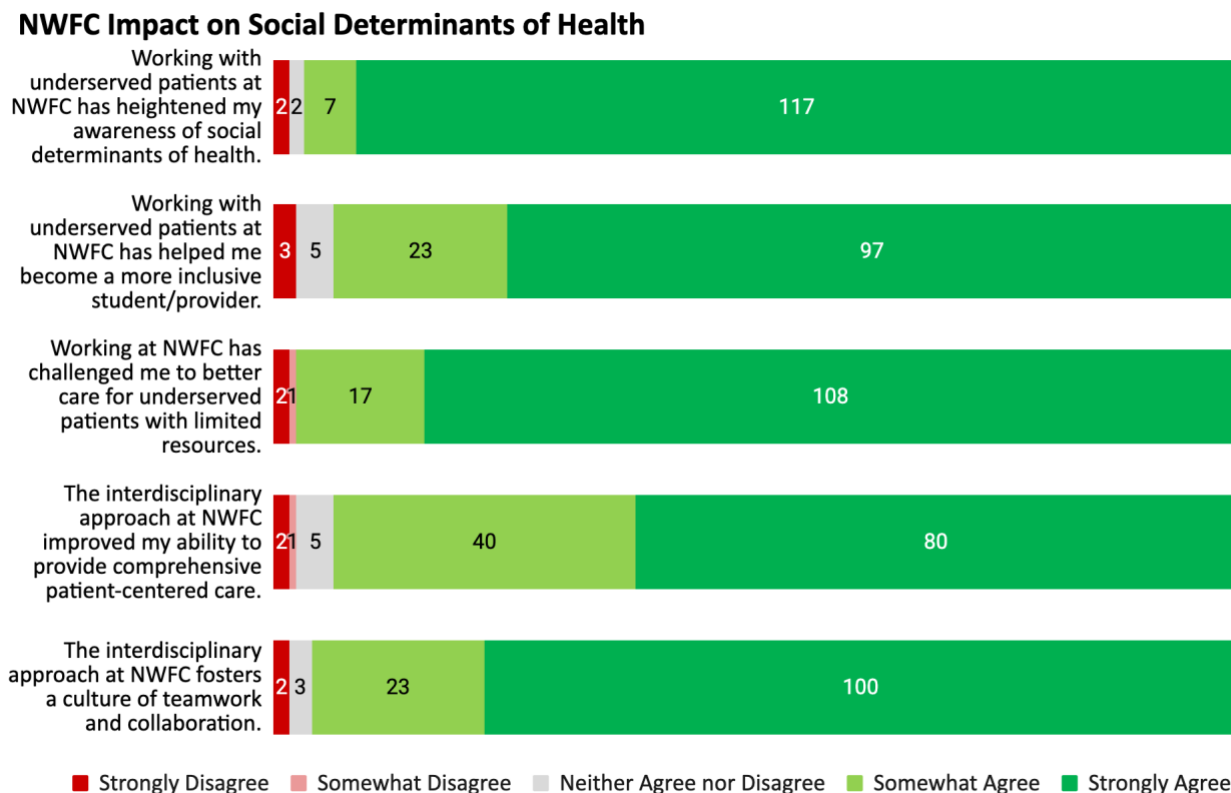
Figure 2. Near West Free Clinic (NWFC) impact on experiential learning.

NWFC Impact on Experiential Learning



Likert scale data demonstrating the impact that volunteering at NWFC had on students' application of material, professional development, and confidence in a clinical setting.

Figure 3. Near West Free Clinic (NWFC) impact on social determinants of health



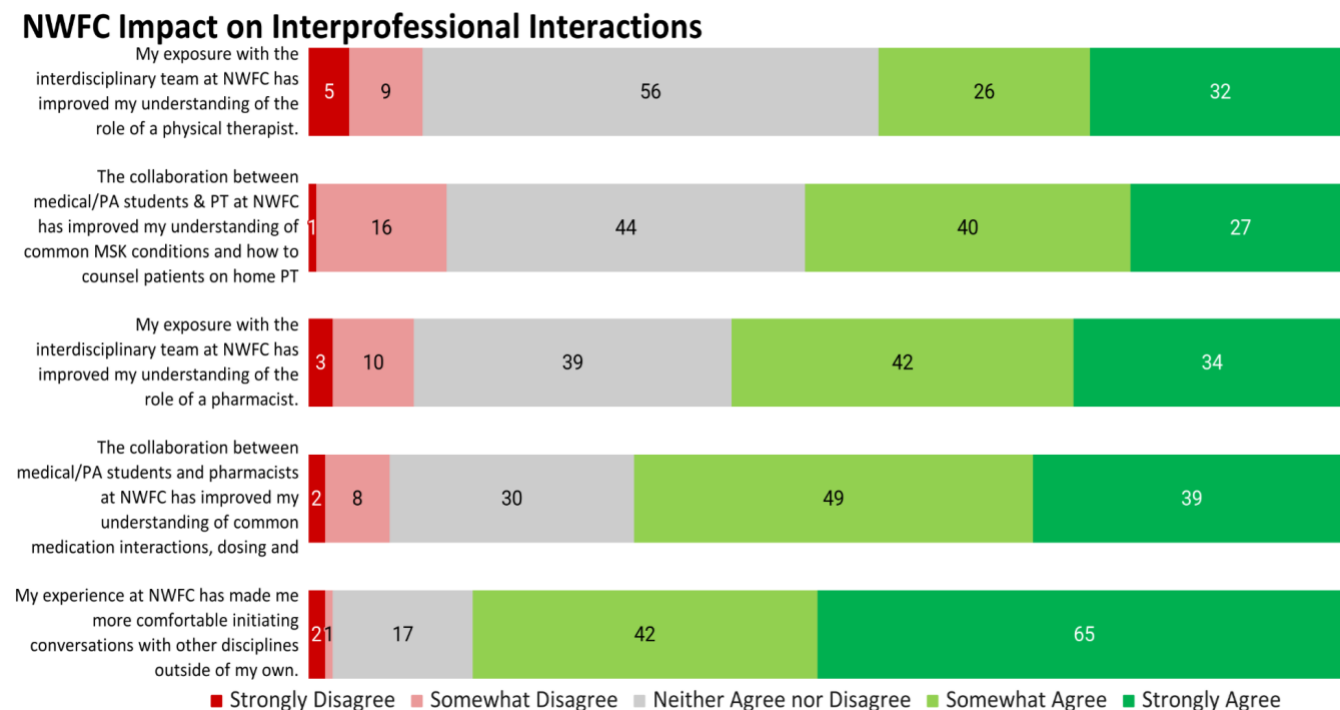
Likert scale data demonstrating the impact that volunteering at NWFC had on students' understanding of social determinants of health, cultural awareness, and resourcefulness in a low-resourced setting.

In a similar manner, medical and PA students interacted with physical therapy students and gained a better understanding of their scope of practice, expectations, and capabilities. These findings coincide with previous interprofessional student experience studies as discussed by Kovalskiy et al. and Oudenampsen et al.^{13,15} As the medical landscape has evolved, a comprehensive care team has become commonplace, particularly as studies have demonstrated their effectiveness.¹⁹⁻²²

Unlike the incorporation of interprofessional experiences into accreditation standards, SDOH are not routinely a required component of healthcare education. Anecdotally, it is most common that the first encounter students have with addressing SDOH as part of whole-person care is on their clinical rotations. Co-curricular involvement in SRFCs is one avenue to expose healthcare professional students to the non-medical factors that impact healthcare. Study respondents support this notion by describing encounters where they needed to rely on their non-clinical knowledge and utilize other professionals to better modify their treatment plan. Volunteering at a free clinic allows healthcare professional students the opportunity to begin developing their non-medical question repertoire, which may have not been covered in their standard academic curriculum.

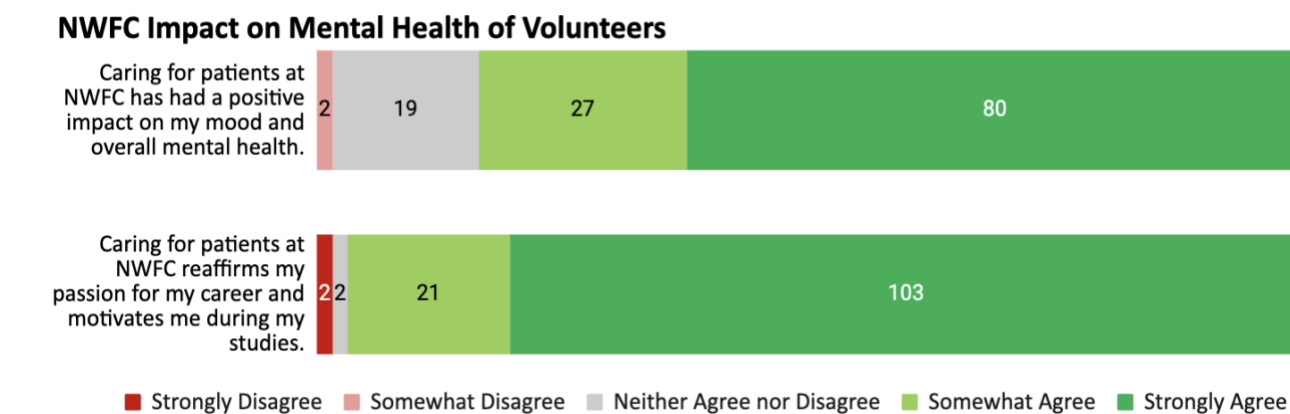
The prevalence of mental distress, depression, and anxiety in graduate students is well-documented in the literature.¹⁸ Engaging in community service fosters a sense of purpose and fulfillment, as students directly contribute to improving the well-being of under-resourced populations. The impact is contagious. Hands-on experience for students helps to alleviate feelings of burnout and stress associated with medical training. It provides students the opportunity to witness the positive impact of their efforts firsthand. This was demonstrated in this study by the large portion of respondents who reported volunteering more than five times (49.9%). Thematic analysis further

Figure 4. Near West Free Clinic (NWFC) impact on Interprofessional interactions



Likert scale data demonstrating the impact that volunteering at NWFC had on students' understanding the role and utility of other medical adjacent professions.

Figure 5. Near West Free Clinic (NWFC) impact on mental health of volunteers



Likert scale data demonstrating the impact that volunteering at NWFC had on students perceived mental well-being and motivation for graduate medical education.

supported the multi-dimensional benefit students gain from being a part of this public health initiative. The authors do acknowledge various limitations to the current study. First, the small sample size limits the generalizability of the study's findings. One potential reason for the sample size was the voluntary nature of the survey with no incentive offered for completion. Participants were contacted utilizing the existing volunteer database of contact information from students who had volunteered since the clinic's inception. Depending upon changes in email, previous volunteers may have not

Table 3. Summary of thematic analysis categories by question taken from student responses on mixed-methods survey

Question	Thematic Analysis and Direct Student Quotes
Describe a specific or challenging instance where the interdisciplinary approach at Near West Free Clinic (NWFC) positively impacted patient care.	<p>Made a positive impact on the perceived patient satisfaction with their care/visit</p> <p><i>“One Saturday we had Pharmacy and Physical Therapy (PT) there. The patient came in for med refills and MSK complaints. It was great to not only be able to treat them as a medical student, but also to involve the pharmacist and physical therapist in the patient care. The patient was very pleased with the thorough care they received that day.”</i></p> <p>More efficient in our care for patients when multiple disciplines are available at once</p> <p><i>“It’s best when we have all of the providers and resources on site ... when we don’t ... it reinforces those barriers we are desperately trying to remove for our patients to have access to care.”</i></p> <p>Increased learning opportunity for students to understand scope of other disciplines in the medical field</p> <p><i>“Working with an interdisciplinary team helped me to better understand the roles of different providers and the importance of those roles in overall patient care. In one instance, the patient required a medication that our pharmacy did not have available for distribution and without insurance would have been too expensive to get at an external pharmacy. The NWFC pharmacist helped to figure out the best medication option for the patient and even looked up nearby pharmacies to send it in order for the patient to get it same day.”</i></p>
How has your interaction with patients at NWFC contributed to your understanding of holistic patient care?	<p>Improved understanding of interdisciplinary and collaborative care</p> <p><i>“My interaction with patients at NWFC made me think about the holistic patient as more than just an injury. There is a medical side, financial side, trust, and psychological side that each patient has.”</i></p> <p>Impactful patient visits that highlighted SDOH in the community</p> <p><i>“Many times at NWFC I encountered patients of low socioeconomic status or non-English speaking who attended the clinic as their primary care because they were unable to receive healthcare by other means. Getting to know the patient and their situation helped me to better understand their life and what factors might be contributing to their current health issues, which ultimately helped determine a better treatment plan.”</i></p> <p>Resourcefulness in a community clinic</p> <p><i>“During each visit, we discuss multiple aspects of the (patient’s) life; i.e. diet, exercise, their work, and how those might be aggravating the problem and/or how they might be sources of support. This, for me, reinforces that we’re treating the whole person, not just the problem.”</i></p>
In what ways do you believe NWFC’s approach contributed to your development as a healthcare provider?	<p>Improved understanding of how socioeconomic factors play a role in patient care</p> <p><i>“I have a better understanding of team-based care and interacting with patients who need translators. I have to expand my memory of medications to not just first line treatments, but what is available financially. I have to consider alternative care plans for patients who do not have access to regular screenings or continuity of care with a PCP.”</i></p> <p>Developed deeper knowledge of medical conditions by leading patient encounters and serving as a mentor to younger students</p> <p><i>“Having the opportunity to practice both didactic and clinical skills outside of an organized school setting really helped me to get a feel for what it was like to be a practicing provider.”</i></p> <p><i>“...helped me to better understand the various medical needs and socioeconomic needs of these various populations which helped me to become a better provider.”</i></p> <p>Able to take ownership of patient care rather than being an observer</p> <p><i>“NWFC provides an incredibly safe place to learn how to start owning patient care. I started in the clinic as a terrified assistant, and finished comfortably and confidently managing patient care and also teaching medical students and patients...kept me grounded in my studies with understanding what we are all truly working toward.”</i></p>

Summary of thematic analysis categories by question taken from student responses on mixed-methods survey

received the survey. A second limitation was the demographic makeup reported by the participants. A majority of respondents were female, White, and non-Hispanic/non-Latino.

A third limitation of the study was the intermittent presence of interdisciplinary personnel that

had occurred over the years. The clinic routinely had medical and physician assistant students and attendings; however, there had been variation of representation of other health disciplines such as physical therapy and clinical pharmacists. This is supported by the study results as the questions addressing impact on interprofessional interactions had the largest number of neutral responses compared to the other sections.

The results of this research article provide various considerations and guidance for those who wish to begin or expand the services of their SRFC. Future research from other SRFC's regarding the impact of interdisciplinary care and co-curricular education would help to validate these findings and provide greater context. Future studies may also consider studying the longitudinal impact of volunteering at a SRFC as it relates to a student's academic journey.

Conclusion

Student-run free clinics, such as NWFC, have a primary goal of providing high quality care to the community with a secondary end point of improving medical education. Students highlighted the mental health benefits of volunteering, the value of interprofessional collaboration, their increased understanding of SDOH, and improved preparedness for clinical rotations. In some of the most stressful years of a healthcare professional's training, students that volunteered at the free clinic acknowledged these benefits and 83% returned to volunteer again. As universities look to enhance the medical education model to train students in a holistic manner, community clinics may be a solution that strengthens the foundation of future healthcare professionals, while serving the needs of the public.

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