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Original Study

Perceived Benefits of Free Clinic Participation on Clinical Education

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Abstract

Background: Free clinics provide valuable services to underserved communities while offering medical students early clinical exposure. However, limited research exists evaluating the benefit of free clinic participation on clinical skill development from the student perspective. This study aims to assess medical students' perceptions of how volunteering at a free clinic influences their clinical skill development.
Methods: A voluntary, anonymous survey was distributed to 68 medical students who had volunteered at St. Matthew's Free Clinic within the past 18 months. The survey included 11 questions, including 7 Likert-scale items assessing perceived growth in clinical skills (e.g., patient history-taking, physical examination, blood glucose measurement, pharmacology knowledge, clinical note-taking, and overall skill development), as well as perceived coursework sacrifice and enjoyment. Thirty-eight students responded (55% response rate). Data was analyzed using descriptive statistics and ordinal logistic regression.
Results: Volunteers overwhelmingly felt that their free clinic experience contributed positively to the development of their clinical skills. Notably, the difference in ratings between school years for "clinical note taking" was statistically significant, with second-year students scoring higher (9.50 ± 0.86) compared to third- and fourth-year students (7.73 ± 1.75, p = 0.0007).
Conclusion: Medical students perceive free clinic participation as beneficial to clinical skill development. Embedding free clinic experiences into the curriculum could strengthen students' foundation of clinical skills prior to their years of clinical training.

Introduction

Numerous literature reviews have shown the positive impact that free clinics can have on both medical students and underserved populations. Medical students in San Diego overwhelmingly agreed that helping at a free clinic was a valuable educational experience and positively influenced their attitudes towards working with underserved patients.[1] As found by medical students at Sidney Kimmel, the benefit can extend far past the first- and second-year curriculum. Students who had not participated in Jeff Hope, their free clinic, reported a significant decline in empathy throughout their education when compared with their peers.[2] Another study showed that free clinic volunteering significantly increased medical students' confidence in their preparedness for clerkships.[3] Overall, medical students benefit from free clinic volunteering while helping underserved populations. While prior literature has demonstrated broad benefits of free clinic participation for medical students, including increased empathy and clinical preparedness, it has not attempted to quantify the perceived impact on clinical skill development.

Student-run free clinics aim to reduce healthcare barriers for patients who have limited access to healthcare. Populations with low socioeconomic status face disproportionately large disparities in care, with African American and immigrant communities particularly impacted.[4,5] In 2022, free clinics served 2-26 million uninsured patients.[6] Currently, 57 million people live in areas designated as having a shortage of primary care.[7] Moreover, a study showed that free primary care clinics reduce the hospital costs associated with non-urgent Emergency Department use and inpatient care.[8] However, to balance the initially high diagnostic and treatment costs, the cost savings must be maintained for at least three years.[8] Another study found that a free clinic for people without insurance added 146 years of good health to its annual patient population and saved local healthcare systems $11.5 million dollars.[6]

In 2024, 12.3% of Spartanburg County residents under 65 were without health insurance, and 14% were living in poverty.[9] Edward Via College of Osteopathic Medicine, Carolinas Campus (VCOM-CC), was founded to prepare community-focused physicians and promote research to improve human health.[10] To support this mission, their medical students are encouraged to serve the local community. In 2010, VCOM-CC established a partnership with St. Luke's Free Clinic.[11] Since then, they have established multiple free clinic initiatives across the local area. This paper focuses on students who chose to volunteer at St. Matthew's Free Clinic.

Founded in 2013 by VCOM-CC students, St. Matthew's Free Clinic was established to reduce transportation barriers. In 2021, it became a satellite of St. Luke's, providing full-service care for adults and children.[12] The clinic runs simultaneously alongside a food pantry, which is relevant due to food insecurity consistently being found as a negative indicator of health outcomes.[13,14,15] The food pantry has served families on a weekly basis since it opened in 2007.[16] In the first two months of 2024, the pantry served 3175 individuals.[16]This makes the food pantry an ideal place to find patients who may have no other access to healthcare. Alongside the clinical staff and food pantry, St Matthew's Free Clinic also partners with AccessHealth. Since social determinants of health disproportionately impact the patient populations served by student-run free clinics, partnering with a community organization helps to address these barriers to care.[4,17] AccessHealth, a non-profit, case management service, was established in the area in 2010 to help improve health outcomes by addressing social barriers that serve as obstacles to patients seeking healthcare.[18] An AccessHealth case manager attends each weekly free clinic shift to help connect patients with resources such as health insurance, smoking cessation programs, housing, food stamps and care navigation.

The student leaders onboard a new roster of volunteers on each block, with previous volunteers serving as mentors. First-time volunteers typically complete three shifts in the block; afterwards, it is flexible. Clinic workflow begins with students being organized into teams of experienced student leaders and new volunteers. Upon arrival, patients check in at intake, completing consent forms and providing demographic and clinical information. A student team collects data, including blood sugar, blood pressure, temperature, heart rate, and oxygen saturation. Patients are then seen by a separate student team, who take a history, perform a focused physical exam, and document the assessment and plan. Teams present their findings to the attending physician, who evaluates the patient, discusses care, and finalizes the plan. Patients receive prescriptions, laboratory orders, and referrals as indicated. Additionally, patients can meet with an AccessHealth representative for assistance with health insurance eligibility and connecting patients to longer-term resources.

The goal of this project is to assess medical students' perceptions of how their clinical skills changed and developed because of volunteering. By evaluating their perceptions, we can identify the benefits of the volunteer program and evaluate how to improve the experience.

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Methods

Individuals who served the St. Matthew's Free Clinic for at least one day during 2023 or 2024 were provided with a voluntary survey through a link embedded within a recruiting email. The

Table 1. Likert scale survey questions with scale

Question Number	Question Wording	Likert Anchors
3	On a scale of 1-10, how much did volunteering at St. Matthew's help you to improve upon taking Blood Glucose	1= did not help, 10= helped the most out of any resource
4	On a scale of 1-10, how much did volunteering at St. Matthew's help you to improve upon taking a Patient History	1= did not help, 10= helped the most out of any resource
5	On a scale of 1-10, how much did volunteering at St. Matthew's help you to improve upon performing a Physical Exam	1= did not help, 10= helped the most out of any resource
6	On a scale of 1-10, how much did volunteering at St. Matthew's help you to improve upon knowledge of Pharmacology	1= did not help, 10= helped the most out of any resource
7	On a scale of 1-10, how much did volunteering at St. Matthew's help you to improve upon clinical Note Taking	1= did not help, 10= helped the most out of any resource
8	On a scale of 1-10, how much time did you feel you had to sacrifice away from schoolwork in order to volunteer at St. Matthew's?	1= none, 10= large amount
9	On a scale of 1-10, how much did you enjoy volunteering at St. Matthew's?	1= did not enjoy it, 10= enjoyed it very much

Likert-scale survey questions and response scale. Non-Likert demographic questions included in the survey but not shown in this table were year of medical school and number of St. Matthew's Free Clinic volunteer shifts completed.

recruiting email contained the survey link, described the research, and included a consent statement. The survey was open for 40 days; multiple reminder emails were sent with the survey to optimize response rates. The survey took 3 minutes or less to complete. No identifying information was asked to protect participants' confidentiality. QuestionPro (Version 2024, QuestionPro Inc., Austin, TX, USA), the database holding the information did not ask for or track any identifying information. The anonymous data was then analyzed for trends using statistical modeling on SAS (Version 2013/9.4, 2013, SAS Institute Inc, Cary, NC, USA) with a two-tailed Type I error rate of 0.05. Descriptive statistics were used to summarize responses for each Likert-scale item, including means and standard deviations. Ordinal logistic regression was performed to assess associations between perceived clinical skill development and independent variables, including year of medical training and number of volunteer shifts completed.

The survey included 11 questions: 1 on year in medical school, 1 on shifts completed, 5 on perceived benefit in skill development, 1 on time sacrificed, 1 on enjoyment of experience, and 1 open-text question for comments. The survey instrument was developed by the study authors based on clinical skills commonly required during St. Matthew's Free Clinic shifts and taught in simulation and classroom settings, no validated instrument specific to free clinic–based clinical skill development was identified. Table 1 demonstrates the exact wording of each survey question along with the corresponding Likert scale anchors. The clinical skills assessed in the survey reflected skills frequently required of students during St. Matthew's Free Clinic shifts and those taught elsewhere in the curriculum, such as simulation labs or classroom sessions. This design allowed us to evaluate not only skill development but also how students perceived the clinic as a resource to learn compared to other modes of instruction. Volunteers were asked to quantify how much the St. Matthew's Free Clinic experience helped them to develop those skills on a scale of 1-10. A score of 10 was used to represent St. Matthew's volunteering helping them the most out of any resource, while 1 represented the experience not helping at all. Before recruiting survey participants, this study was approved by VCOM-CC Institutional Review Board.

Results

Table 2 shows the average response rating for each skill and the standard deviation. Students

Table 2. Descriptive statistics for outcome variables

Variable	Mean ± Standard Deviation
Taking blood glucose	8.39±1.95
Taking patient history	9.11±1.29
Performing physical examination	8.79±1.58
Knowledge pharmacology	7.03±1.98
Clinical note-taking	8.78±1.55
Overall skills development	9.13±1.23
Sacrifice	4.21±2.06
Enjoyed volunteering	9.55±0.89

Table 3. Comparison of outcome variables by Years using Wilcoxon Rank Sum Test

Variable	Years		p-value
	2 (N= 23)	'3-4' (N= 15)	
Taking blood glucose	8.70 ± 1.96	7.93 ± 1.91	0.1437
Taking patient history	9.30 ± 0.93	8.80 ± 1.70	0.6278
Performing physical examination	9.13 ± 1.32	8.27 ± 1.83	0.1401
Knowledge pharmacology	7.26 ± 2.18	6.67 ± 1.63	0.3105
Clinical note-taking	9.50 ± 0.86	7.73 ± 1.75	0.0007*
Overall skills development	9.48 ± 0.85	8.60 ± 1.55	0.0854
Sacrifice	4.30 ± 2.08	4.07 ± 2.09	0.7353
Enjoyed volunteering	9.65 ± 0.83	9.40 ± 0.99	0.2969

**Signifies significance p<0.05*

Table 4. Comparison of outcome variables by shifts using Wilcoxon Rank Sum

	Shifts		
Variable	Less than 10 (N=19)	Greater than or equal 10 (N=19)	P-value
Taking blood glucose	8.11 ± 1.82	8.68 ± 2.08	0.1713
Taking patient history	8.95 ± 1.43	9.26 ± 1.15	0.4822
Performing physical examination	8.58 ± 1.54	9.00 ± 1.63	0.2724
Knowledge pharmacology	6.74 ± 1.79	7.32 ± 2.16	0.3143
Clinical note-taking	8.72 ± 1.32	8.84 ± 1.77	0.3548
Overall skills development	9.05 ± 1.31	9.21 ± 1.18	0.8066
Sacrifice	3.84 ± 2.17	4.58 ± 1.92	0.2930
Enjoyed volunteering	9.58 ± 0.77	9.53 ± 1.02	0.8445

reported the highest average rating for "enjoyed volunteering" (9.55 ± 0.89), followed by "overall skills development" (9.13 ± 1.23) and "taking patient history" (9.11 ± 1.29). Lower average ratings were observed for "knowledge of pharmacology" (7.03 ± 1.98) and "sacrifice" (4.21 ± 2.06). Overall, 57.89% of participants in the survey ranked a 10 for “overall skills development” showing that this free clinic experience helped them the most out of any resource to develop their clinical skills.

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- Also can remove the border above p-value. P-value is its own header than is not related to years.
- Bold all the subheaders

Years p-value
Var. 2 (N=23) 3-4 (N=15)

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Table 3 compares the mean ratings between second-year students and those in their third or fourth year. Second-year students consistently reported higher average scores across most skills. Notably, the difference in ratings for "clinical note taking" was statistically significant, with second-year students scoring higher (9.50 ± 0.86) compared to third- and fourth-year students (7.73 ± 1.75, $p = 0.0007$). Differences in other variables such as "overall skills development" (9.48 ± 0.85 vs. 8.60 ± 1.55, $p = 0.0854$) and "performing physical examination" (9.13 ± 1.32 vs. 8.27 ± 1.83, $p = 0.1401$) approached statistical significance but did not reach it ($p < 0.05$).

Table 4 compares the mean rankings between student volunteers who completed less than or greater than 10 shifts. The results were very similar across groups, with no statistically significant differences observed. Students with greater than or equal to 10 shifts reported slightly higher ratings for skills such as "taking patient history" (9.26 ± 1.15 vs. 8.95 ± 1.43), "performing physical examination" (9.00 ± 1.63 vs. 8.58 ± 1.54), and "knowledge of pharmacology" (7.32 ± 2.16 vs. 6.74 ± 1.79), but none of these differences reached statistical significance ($p < 0.05$).

Discussion

Volunteers overwhelmingly felt that their free clinic experience contributed positively to developing their clinical skills. Table 1 shows all variables averaged above seven out of ten, indicating students found St. Matthew's a helpful learning resource. Time sacrificed was measured inversely; a rank of ten meant a large time sacrifice, but the average score of four suggests the time commitment was manageable. The lowest-ranked area of impact was knowledge of pharmacology, likely because VCOM-CC students have a dedicated pharmacology class in every block and numerous online resources to help. While every skill is integrated into the curriculum, pharmacology is particularly rigorous due to board exam demands.

In Table 2, a statistically significant result is that second-year students felt that their experience improved their note-taking skills more than third-year students. A potential explanation is that second-year students have fewer resources in this area, while third-year students have more resources once their clinical rotations have started.

Table 3 demonstrates there is no statistical difference in the number of shifts and level of benefit, indicating that any exposure to free clinic volunteering is valued.

Free clinic experiences represent a unique clinical learning opportunity outside of standard third-year clerkships. The results of this study are important because free clinic experience is not routinely included in the traditional medical curriculum. This study indicates that first- and second-years benefit from the education early free clinic experience imparts. Along with other clinical skills, students gain firsthand experience caring for patients with low socioeconomic status and navigating social barriers. The educational benefits identified are not only valuable for student

Furthermore, the survey data may positively impact recruitment and retention, as students aware of the benefits are more likely to volunteer. This suggests that integrating free clinic work into the curricula could create a more consistent base, enhancing learning opportunities and clinic efficiency.

Some limitations to the study include the modest survey response rate, with 38 completed responses despite a pool of 68 volunteers. With a response rate of 55%, there is a possibility of response bias. Respondents may have had more favorable views or higher engagement, potentially overrepresenting positive perspectives. In addition, of the responses, 23 were completed by second-year students and 15 from third- and fourth-years. In general, the third- and fourth-years scored the benefit to their skills lower than the second-years but were a smaller group in the analysis. Because of this lower response rate, third- and fourth-years were grouped together in the final analysis, though differences between these cohorts may exist. Notably, some third- and fourth-years may have volunteered under a different student coordinator when they started due to leadership transitions,

and the clinic's growth each year could have contributed to variations in experience. These limitations should be considered when interpreting the results and could impact the generalizability of the study. Another potential limitation to the survey is that VCOM-CC has multiple free clinic initiatives, which provide students with multiple free clinic experience opportunities. This makes it a challenge to quantify the impact of St. Matthew's Free Clinic, specifically, other than students' personal reports. Students who volunteered at more than one free clinic may feel more confident in their skills in general, which could have impacted the results. Lastly, the use of a non-validated survey may introduce measurement bias, and so conclusions of the study based on data from the survey may be inaccurate.

Further research could potentially assess the quantity of prior free clinic experiences overall. It may also be beneficial to follow the same cohort of students to investigate how their opinions shift as they progress through their medical education. Another interesting topic to evaluate is how the volunteer experience has changed over time as St. Matthew's Free Clinic has evolved, with larger groups of volunteers supporting an expanding patient population.

Conclusion

This study sets out to qualitatively evaluate medical students' perception of how free clinic volunteering helped develop their clinical skills. The results showed that students benefited greatly from the hands-on education that St Matthew's Free Clinic provided. Free clinics are most beneficial in communities that have barriers to healthcare access, especially those with low socioeconomic status. As well as bridging care gaps, the results suggest that free clinic experience, such as that provided at St. Matthew's Free Clinic, embedded into a curriculum recurrently could provide students with a solid foundation of skills prior to entering their years of clinical training.

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Disclosures

The authors have no conflicts of interest to disclose.

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