



Characterizing Preceptor Effectiveness in Student-Run Free Clinics: Perspectives of Current Students and Preceptors

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Abstract

Background: Phillips Neighborhood Clinic (PNC) is an interprofessional, student-run free clinic in Minneapolis, Minnesota that serves underrepresented and underinsured patients. Preceptors play a critical but inconsistently defined role at PNC, with no formal training on feedback deliver or diversity, equity, and inclusion (DEI) practices. This project sought to understand and address the training needs for preceptors.

Methods: One 32-question survey was emailed to preceptors, and another 12-question survey was sent to student volunteers. Quantitative analysis included Mann-Whitney U test was used to compare preceptors with and without PNC training and those with and without experience precepting students. Student perception was also measured with correlational analysis ($p < 0.05$). Quantitative analysis involved identifying key themes for preceptor training and improvement.

Results: In total, 29 preceptors (25.9%) and 43 students (10.6%) completed the surveys. Twenty-three preceptors (79.3%) reported having worked with students outside of PNC, and 25 (86.2%) had received prior DEI training. Only 17 preceptors (58.6%) reported receiving training for their preceptor role at PNC. Analysis of responses showed a statistically significant difference in preceptor comfortability in their role between those who did and did not receive PNC training. Analysis of survey responses showed no statistically significant difference in providing feedback between preceptors who work with students outside of PNC and those who do not. Through thematic analysis students were found to report that preceptors lacked information on several DEI topics. Students also reported receiving inconsistent frequency and types of feedback from their preceptors. Preceptors did not identify either of these as major concerns within their survey.

Conclusions: The results identified not only a difference between preceptors who received PNC training, but also different perspectives between preceptors and students regarding preceptor roles and effectiveness. These findings will inform future formal preceptor competency training programs and a standardized method for providing and receiving feedback.

Introduction

Student-run free clinics (SRFCs) serve historically underrepresented and uninsured community members and provide an affordable way to gain access to healthcare and health information¹. In addition to supporting healthcare access and equity, SRFCs provide opportunities for health professional students to practice their clinical, communication, and community-building skills. An additional group of stakeholders that supports the goals of an SFRC and its operations are the preceptors. Preceptors are licensed healthcare professionals in fields such as medicine, pharmacy,

nursing, etc. who volunteer to oversee students in the provision of clinical care. Preceptors have a key role in the context of free-run clinics; they guide patient care as well as model values and characteristics regarding how to care for patient populations with unique socio-economic needs. Previous research demonstrates that preceptors have complex motivations for volunteering, but routinely cite a desire to mentor students and help underserved patient populations.² From the student perspective, research in broader clinical settings shows that effective preceptors are crucial not only in furthering clinical education, but also in shaping professional values, creating mentor-mentee relationships, and assisting with specialty discernment.³ To date, there is little research examining the relationship between preceptors and students in the context of free-run clinics and the characteristics of preceptors that are important to students.

However, there are challenges associated with preceptors at SRFCs including recruitment, retention, and preceptor-community relationships. Other studies show that physicians cite barriers to volunteering with SRFCs including work obligations, family obligations, lack of comfortability, and concerns about patient liability.² These other obligations and constraints on preceptors can make it difficult for students to receive individualized feedback on their clinical skills such as patient interviewing, physical exams, diagnostic reasoning, and clinical notes. In addition, some of the challenges are due to a lack of preceptor comfortability which may be motivated by a lack of broader knowledge about the community or lack of experience working with complex patients.^{3,4} The needs of complex patients can include limited preventative care, socioeconomic resources, and need for interpreters.⁵⁻⁷ Preceptors face other challenges working in SRFC's including limited access to healthcare resources and lack of integration with traditional healthcare systems which are barriers to high quality longitudinal care as well as working with under-resourced populations where it can take time to build trust with the community.⁸⁻¹⁰ Little research has been done to investigate these gaps in preceptor knowledge or student perceptions of preceptors expertise. In addition, the definitions and goals associated with preceptors are highly variable depending on the individual and their interprofessional role. Other studies have proposed a variety of reasons why this might be the case, including lack of preceptor retention and training processes for preceptors.²

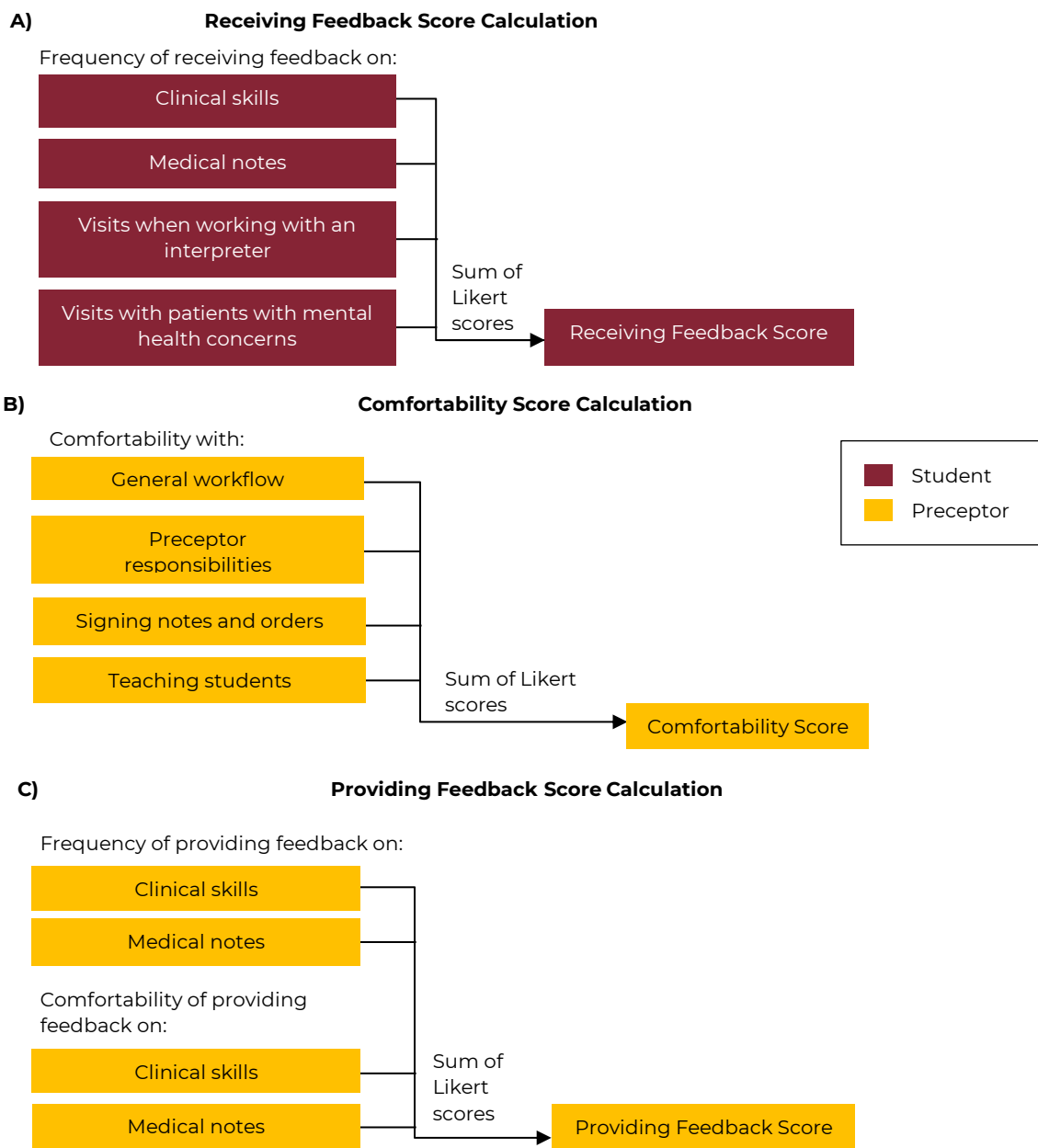
This study was conducted at Phillips Neighborhood Clinic (PNC) which is an interprofessional, student-run free clinic in Minneapolis, Minnesota. PNC is open two nights per week, and volunteers include: audiology, dental, healthcare administration, medical, medical lab science, nursing, nutrition, pharmacy, physical therapy, public health, occupational therapy, and social work students. PNC serves a diverse patient population, with the majority identifying as immigrants, low income, or uninsured. The goal of this study was to understand perspectives of both students and preceptors on preceptor effectiveness in the setting of SRFCs. Finally, the study explores how these results could translate to the implementation of a standardized training program for current and future preceptors.

Methods

Data Collection

Two surveys were developed: one which was sent to PNC preceptors and one to PNC student volunteers to assess current perceptions of preceptor training, expertise, and feedback delivery. The surveys consisted of 32 questions for preceptors and 12 questions for students and included combinations of multiple choice, yes/no, open-response, and 5-point Likert scales (1=rarely/ineffective and 5=frequently/very effective). We designed questions to determine whether preceptors and students felt similarly on clinic topics such as student feedback, preceptor workflow, and promotion of diversity, equity, and inclusion (DEI). More questions were included on the preceptor survey to assess preceptor's training and comfortability and to collect responses for qualitative analysis. Additionally, the student survey was shortened to increase response rates. Surveys were developed in Google Forms (2008, Google LLC., Mountain View, CA) and emailed to all students and preceptors with reminders provided on clinic nights. The complete surveys can be found in the Appendices.

Figure 1. Student and preceptor survey calculations



The compiled variables calculated from the student (maroon) and preceptor (yellow) surveys are visually represented.

Qualitative Data Analysis

Survey results were collected from October 2022 to December 2022. Qualitative data, which included open responses, was analyzed through thematic analysis. Five independent reviewers read through the responses from both surveys to familiarize themselves with the data. Reviewers organized responses into categories for further coding which included clinic workflow, communication, electronic health record access, training, feedback, and DEI.

Quantitative Data Analysis

The quantitative data was analyzed to determine the differences in perceptions within and between each cohort. Within cohorts, we determined means and standard deviations of Likert scales,

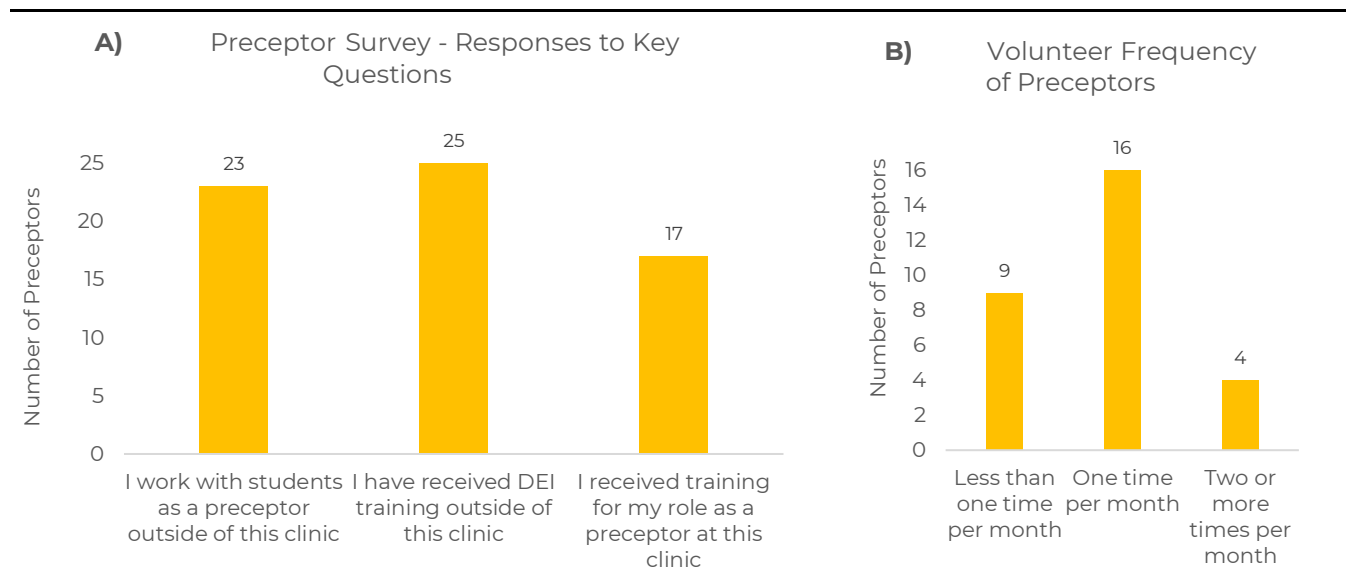
Table 1. Survey response demographics by profession

| Profession | Students, n=43 (%) | Preceptors | |
|----------------------|--------------------|------------|------------------|
| | | n=29 (%)* | Total N=112 (%)† |
| Medicine | 16 (37.2) | 8 (27.5) | 25 (32.0) |
| Nursing | 6 (13.9) | 5 (17.2) | 9 (55.6) |
| Pharmacy | 11 (25.6) | 6 (20.7) | 27 (22.2) |
| Physical Therapy | 3 (6.9) | 6 (20.7) | 26 (23.1) |
| Nutrition | 2 (4.6) | 1 (3.4) | 16 (6.3) |
| Occupational Therapy | 2 (4.6) | 1 (3.4) | 7 (14.3) |
| Phlebotomy | 0 (0.0) | 1 (3.4) | 1 (100) |
| Audiology | 0 (0.0) | 1 (3.4) | 1 (100) |
| Other | 3 (6.9) | 0 (0.0) | 0 (0.0) |

*Indicates the number of preceptors representing their profession out of total 29 preceptor responses.

†Indicates the number of total preceptors from each profession and the percent of participating preceptors, calculated from n/N.

Figure 2. Preceptor survey responses to key questions and volunteer frequency of preceptors



A) Preceptor survey responses to key questions, indicating the number of preceptors that answered “yes” to the listed questions. B) Preceptor volunteer frequency per preceptor.

percentages of yes/no questions and conducted variable compilation to perform correlation and other analyses. Students were asked how often they receive feedback on four different topics: clinical skills, note-writing, visits with interpreters, and visits with patients who have mental health concerns. The latter two topics were included to assess visits where students have limited experience and may elicit feedback. Each of these questions was asked on a 5-point Likert scale and compiled into a “Receiving Feedback Score” variable. We then determined the correlation of this Receiving Feedback Score to the student’s perception on how helpful their preceptor has been.

A similar process was used to create the “Comfortability Score” and the “Providing Feedback Score” from the preceptor survey. The former score is a sum of responses from 5-point Likert scales on being comfortable with clinic workflow, preceptor responsibilities, signing notes and orders, and teaching students. Higher score indicates a better understanding of these topics. The scores were

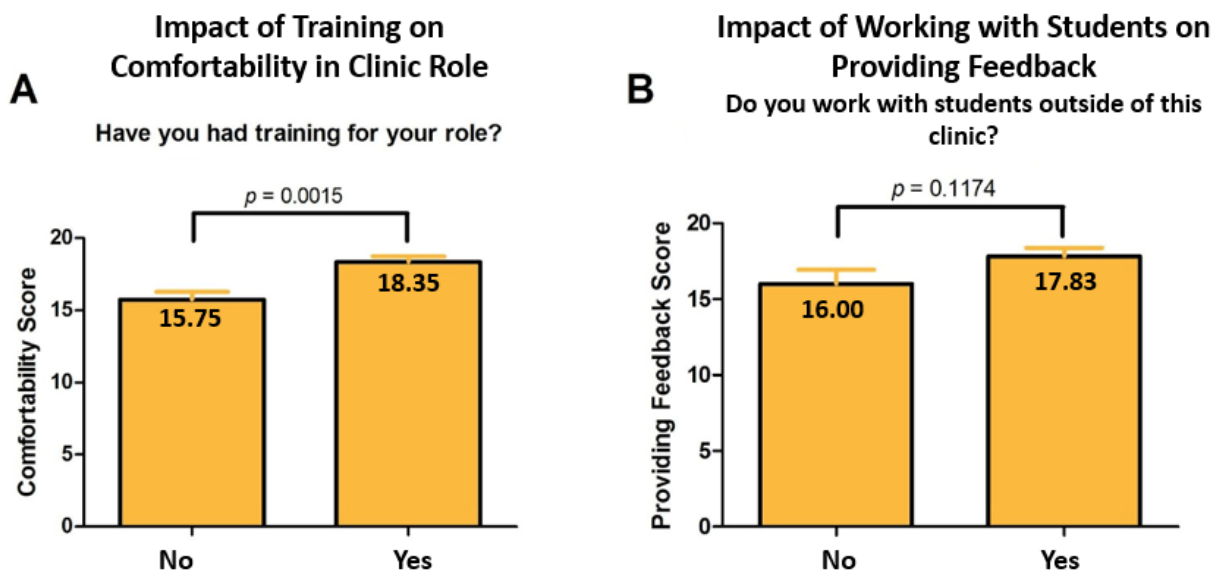
compared using a Mann-Whitney U test and 95% confidence interval (CI) between preceptors who do and do not work with students outside of PNC. Between cohorts, we compared means of values using t-tests. All compiled scores are visually described in Figure 1. Pearson's correlational analysis was also used to assess the relationship between feedback and perceived effectiveness. Analysis was performed using the GraphPad software (version 5.0, GraphPad Prism, Carlsbad, CA). P-value <0.05 was considered statistically significant. This study was approved by the PNC Administrative Board as a quality improvement project.

Results

A total of 29 out of 112 preceptors (25.9% yield) and 43 out of 404 students (10.6% yield) participated in the survey. Survey response rate by professional category is presented in Table 1. Most common preceptor responses were from medicine (n=8), pharmacy (n=6), and physical therapy (n=6). Most common student responses were from medicine (n=16), pharmacy (n=11), and nursing (n=6). Results from the student surveys were not linked with specific preceptor responses due to the small number of responses in each profession.

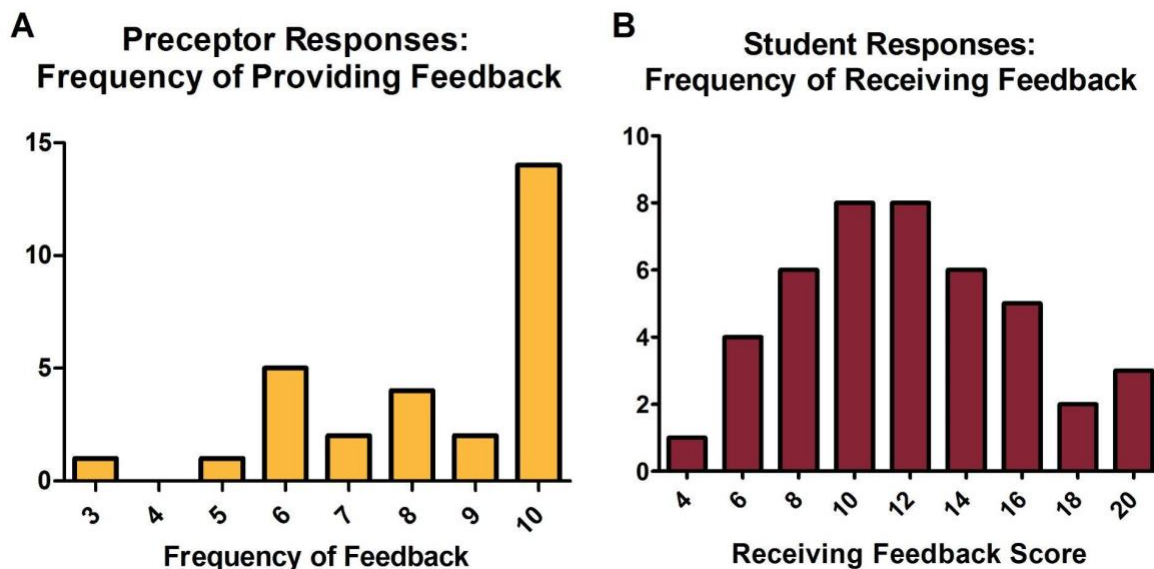
Independent qualitative review of survey responses yielded 3 main areas for further analysis: 1) inconsistent training affects preceptor comfortability, 2) more efforts are needed to improve DEI at PNC, and 3) providing feedback is important to students and preceptors despite workflow constraints. Since there is no standardized selection process or training for preceptors at PNC, there were several items on the survey to establish training and experience. Twenty-three (79.3%) indicated that they work with students as a preceptor outside of PNC, and 25 (86.2%) indicated that they had received DEI training outside of PNC (Figure 2A). Only 17 (58.6%) indicated that they received training for their role as a preceptor at PNC. In a free response portion of the survey, several respondents described their training as shadowing an established preceptor in their profession for a single shift at PNC. The frequency of volunteering at PNC varied between preceptors (Figure 2B) with 16 (55.2%) volunteering once per month, 9 (31.0%) volunteering less than once per month, and 4 (13.8%) volunteering two or

Figure 3. Impact of training on comfortability in clinic role and impact of working with students on providing feedback



A) Impact of formal training for preceptor role at PNC on Comfortability Score as calculated from the preceptor survey responses. B) Impact of experience working with students outside of PNC on Providing Feedback Score as calculated from the preceptor survey.

Figure 4. Frequency of providing and receiving feedback



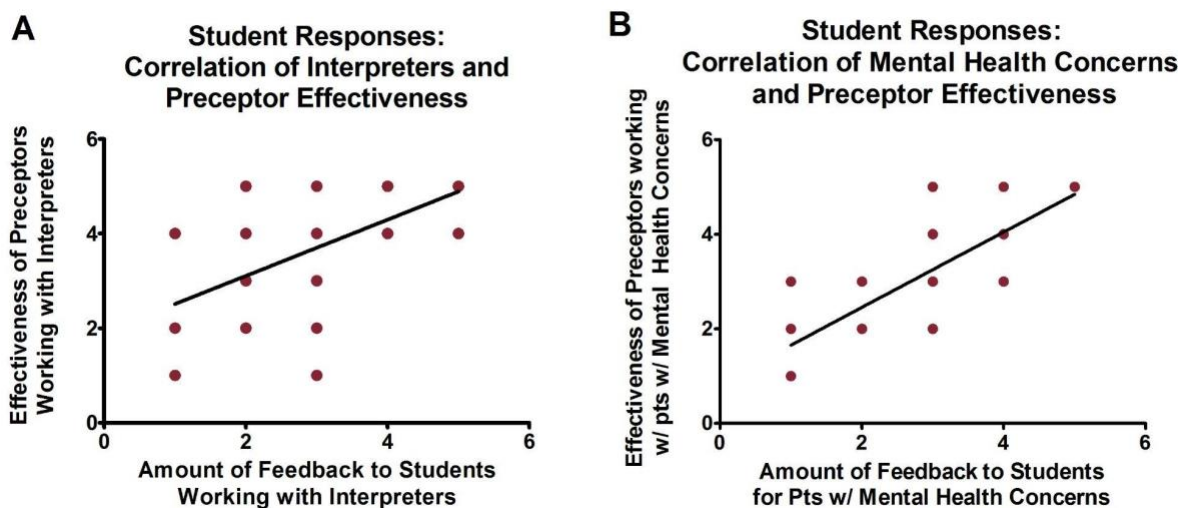
A) Comparison of how often preceptors reported providing feedback to students to how often students reported receiving feedback from preceptors. For preceptor responses, the frequency of feedback is the combined score of how often preceptors provide feedback on clinical skills and on note writing. B) For student responses, the Receiving Feedback Score was calculated by adding 5-point Likert values for how often students feel they receive feedback on four areas of clinical practice: clinical skills, note-writing, working with interpreters, and working with patients who have mental health concerns.

more times per month. Figure 3A demonstrates that preceptors who received formal training for their role at PNC had higher Comfortability Scores with a mean of 18.35 (CI 17.52 - 19.18), compared to a mean Comfortability Score of 15.75 (CI 14.60 - 16.90) for those who had not received formal training ($p = 0.0015$). There was not a statistically significant difference in the Providing Feedback Score between preceptors who work with students outside of PNC and those who do not ($p = 0.1174$), as demonstrated in Figure 3B.

An area of interest for this study is how often preceptors provided feedback to students on their patient care, including their clinical skills and note writing. Figure 4A is the histogram for the combined score of how often preceptors provided feedback on clinical skills and note writing, as reported in the preceptor survey. This can be compared to Figure 4B, which shows the histogram for the Receiving Feedback Score generated from the student survey. For feedback frequency on the preceptor survey (Figure 4A), the mode was a score of 10 out of 10, meaning that most preceptors reported that they provide feedback “Very Frequently” on both items pertaining to frequency of feedback. In contrast, the Receiving Feedback Score on the student survey shows a normal distribution (Figure 4B), demonstrating a discrepancy between preceptor-perceived frequency of giving feedback and student-perceived frequency of receiving feedback.

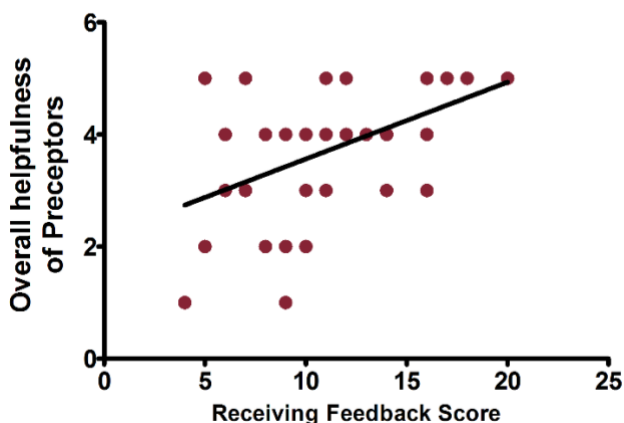
Another area of interest was student-perceived preceptor effectiveness. The student survey contained two questions pertaining to working with patients that require an interpreter, one asking how often students receive feedback from preceptors and the other asking students to rate the effectiveness of preceptors while working with interpreters. There was a 0.6237 (CI 0.3978 - 0.7783, $p = <0.0001$) correlation between the amount of feedback received and student-perceived preceptor effectiveness while working with interpreters, as shown in Figure 5A, (R-square = 0.3889). The student survey also contained questions pertaining to working with patients with mental health concerns. There was a 0.8233 (CI 0.6946 - 0.9009, $p = <0.0001$) correlation between the amount of feedback received and student-perceived preceptor effectiveness

Figure 5. Student Responses correlation of interpreters and preceptor effectiveness and correlation of mental health concerns and preceptor effectiveness



A) Correlation between the amount of feedback students received and student-perceived effectiveness of preceptors when working with interpreters and B) when working with patients with mental health concerns.

Figure 6. Student responses: correlation of feedback and helpfulness

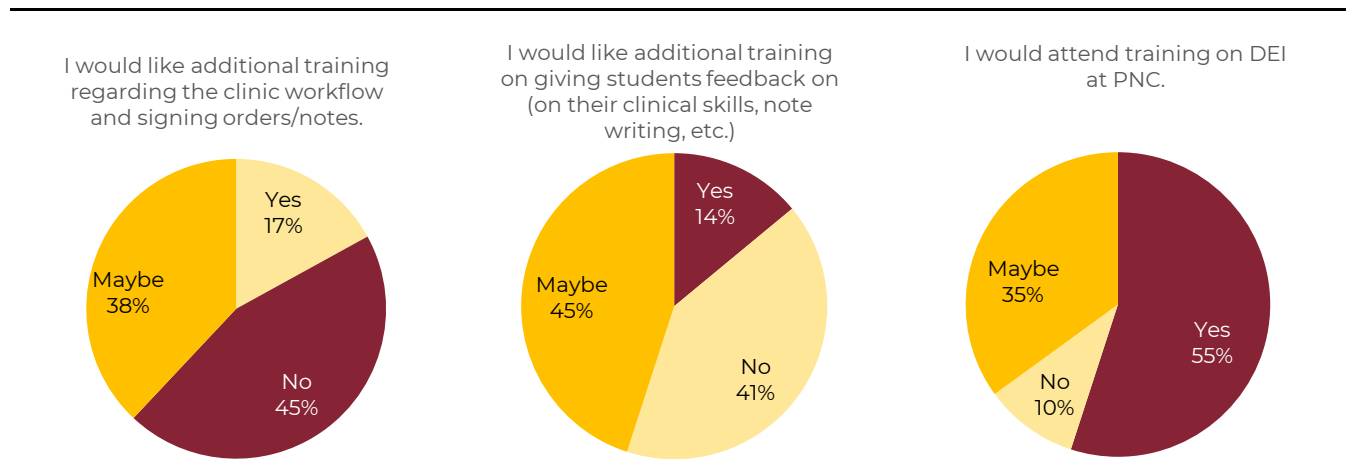


Scatter Plot demonstrating relationship between overall perceived effectiveness of preceptors. The Receiving Feedback Score was calculated by adding 5-point Likert values for how often students feel they receive feedback on four areas of clinical practice: clinical skills, note-writing, working with interpreters, and working with patients who have mental health concerns.

while working with patients with mental health concerns, as shown in Figure 5B, (R-square = 0.6778). The student survey also included a question regarding overall preceptor effectiveness and there was a 0.5224 (CI 0.2632 - 0.7112, $p = 0.0003$) correlation between the Receiving Feedback Score received and overall student-perceived preceptor effectiveness, as shown in Figure 6 (R-square = 0.2729).

The preceptor survey also included items to assess interest in additional training. Seventeen percent of preceptors indicated that they would like additional training regarding clinic workflow and the process for signing orders and notes, and 14% indicated that they would like additional training on giving students feedback (Figure 7). Additionally, 55% of preceptors indicated that they would be willing to attend a training session on DEI at PNC (Figure 7).

Figure 7. Preceptor responses to survey questions pertaining to additional training



Discussion

This data demonstrates that there are several areas of disconnect between students and preceptors within this particular free clinic. First, preceptors' self-reported frequency of feedback did not align with students' perceptions, indicating a potential disconnect in communication. Several factors impacted the quality of feedback, including requiring a safe environment, time, privacy, the preceptors' ability to give difficult and specific feedback, and the learner's ability to reflect on and change their performance based on the feedback which align with methodologies reported in other similar learning environments.¹¹ An intervention to address the perceived lack of frequency could be to implement specific times for feedback. For example, towards the end of each clinic shift, preceptors could touch base with their students individually for a clinical debrief. This would be enforced to address the disparity in students' versus preceptors' perception of the amount of feedback being given currently. As reported in another primary care clinic it may be important to engage preceptors for feedback at a time of their convenience.¹² Students could email their preceptor the following day requesting a confirmatory signature for their electronic medical note, and feedback on its content and structure to follow this model. Both these interventions would serve as designated times to answer questions, and relay points for improvement. The clinic could also provide instructional materials to preceptors about how to give effective feedback as part of their onboarding. Considering that the amount of feedback received was highly correlated with preceptor effectiveness, these simple interventions could considerably improve students' perceptions of their preceptors and follow best practices as proposed by a systematic review.¹³

In addition, DEI competence, specifically while working with interpreters or on mental health issues, was highly correlated with preceptor effectiveness from the perspective of the student. While our study found that the majority of preceptors had experience with DEI training outside of the clinic, most of the preceptors indicated interest in attending further DEI training. A model for a 3-session DEI training series already exists for all student volunteers as part of the mandatory onboarding. These one-hour sessions focus on interprofessionalism, cultural competence, and structural humility. Students review case studies of clinic patients, share first impressions, reflect upon previous personal experiences, and engage in group discussions on inequities and social determinants of health (SDOH) in order to develop strategies for addressing the patient cases. This model could be emulated and tailored according to preceptor needs. The preceptor training sessions could be similarly hosted by the Community Relations Team comprised of clinic student-leaders. As only 55% of preceptors responded "Yes" to attending such sessions, multiple dates and times can be offered to accommodate varying schedules, as well as virtual options to increase accessibility. Finally, this could be a required

annual session for all new and continuing preceptors, allowing for more rich discussions with those who have encountered and navigated the distinct needs of this clinic's patients. Implementation of such a training series creates an opportunity for preceptors to learn about the SDOH impacting the surrounding community which may have unique needs relative to their previous training institutions or patient populations.

Limitations

This study does have several limitations. The response rates from both preceptors and students were relatively low, potentially introducing a selection bias for those who had exceptionally positive or negative experiences and wanted to communicate them. Responses were able to be paired by role (preceptor and student) but not by discipline (medicine, pharmacy, etc.) which introduced uncertainty as to the direct link between preceptor and student responses. Additionally, the quantitative nature of the Likert scale questions may not have captured the full spectrum of experiences. Future studies could explore qualitative reflections and narratives of both student and preceptor experiences with these topics in free clinic settings and compare responses within these groups. Additionally, there could be supplemental efforts to gather more data and higher response rates, such as by increasing the number of reminder emails, reminding volunteers at every clinic shift, or addressing specific members to increase a sense of responsibility in submitting feedback.¹⁴

Conclusions

Overall, these findings suggest a need for targeted interventions to enhance preceptor training. Our study demonstrates that preceptors feel more comfortable working within their role if they have more access to training. These results suggest that free clinics should have standardized training programs focused on three main objectives: communication of clinic workflow and goals, DEI concerns and partnership with the surrounding community, and feedback and mentorship with students. These objectives could be achieved through a combination of online modules, in-person shadowing experiences, and DEI community conversations. Implementing such comprehensive training programs will ultimately improve the effectiveness of preceptors and the quality of care provided in our free clinic.

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Disclosures

The authors have no conflicts of interest to disclose.

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