

One Health clinic promotes veterinarian-client trust among underserved pet owners and provides learning opportunities for veterinary students

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<https://doi.org/10.2460/javma.21.06.0274>

OBJECTIVE

To determine the impact of a free One Health clinic with human and veterinary services on the veterinary-client relationship for underserved pet owners. A secondary aim was to understand the experience of veterinary students and volunteers who participated in the clinic.

SAMPLE

78 pet owners, 55 students and 32 volunteers who attended the Delaware Humane Association One Health Clinic between December 2018 and November 2019.

PROCEDURES

Pet owners completed an anonymous questionnaire prior to and following their veterinary appointment regarding their trust in the veterinary profession, feelings of enablement and veterinarian-client concordance. Students and volunteers completed a questionnaire within 72 hours of clinic participation about their perceptions of the educational value of the clinic.

RESULTS

Following the One Health clinic, client trust in the veterinary profession increased significantly ($t = -5.50$, $P < 0.001$). Clients also reported high levels of enablement and veterinarian-client concordance. Students and volunteers agreed the clinic was a valuable educational experience (97.7%) and reported increased compassion, enhanced leadership, communication and teamwork skills, and an improved ability to identify social issues and think critically.

CLINICAL RELEVANCE

The results support the utilization of One Health clinics to improve access to veterinary care for underserved pet owners. Clients reported high levels of trust, enablement and concordance following the clinic which could have long-lasting effects on their willingness to seek veterinary care and comply with veterinarians' recommendations. The positive experiences of students and volunteers also highlights the potential of low-cost veterinary clinics as unique educational experiences.

Dramatic health inequities currently exist both globally and within the U.S.^{1,2} In the U.S., the richest 1% of the population is expected to live 10 to 15 years longer than the poorest 1%.³ Racial and ethnic minorities have significantly higher rates of chronic disease^{2,4} and preventable hospitalizations,⁵ and individuals in underserved communities are more likely to have an unmet medical need and less likely to receive preventative care.⁶ Providing all Americans with access to health care is essential to reduce health inequalities and, as a result, free clinics form an integral part of the US health-care system.^{7,8}

Similar access issues also exist in veterinary medicine, compromising the health of many com-

panion animals. Cost, accessibility to clinics, cultural/language barriers, a lack of pet owner education and poor veterinarian-client relationships have been identified as the most common barriers to veterinary care.⁹ These barriers disproportionately affect some groups of the population, such as African Americans and Native Americans who are more likely to report a lack of trust in veterinarians, highlighting the need for community-based outreach programs.¹⁰ Low-cost veterinary clinics are not as well established or researched as low-cost human health-care clinics,⁹ although initial data suggests they could serve a similar purpose and improve access to care for many companion animals.¹¹

Community clinics comprising both human and veterinary health-care services also present a unique opportunity to improve equity of access and capitalize on the concept of One Health, ie, the interconnection between the health of humans, nonhuman animals and the environment.¹² In Canada, human health-care practitioners have leveraged the human-animal bond to reach and provide care to homeless individuals by simultaneously offering veterinary care and appealing to the needs of the pet. Preliminary evidence found homeless individuals who attended these One Health clinics had an increased rate of influenza vaccination compared with nonattendees.¹³ The human-dog bond has also been utilized in other health interventions, such as physical activity promotion among overweight owners and pets.^{14,15}

The physician-patient relationship is integral to the success of health care delivery in human medicine. Trust in the physician and the health-care system can affect an individual's access to and utilization of care, adherence to recommendations and self-rated health.¹⁶⁻²⁰ Patient enablement, defined as the patient's ability to understand and cope with their health and life after a consultation,²¹ predicts successful health care delivery and is frequently used as an indicator of the quality of the physician-patient relationship.²²⁻²⁴ Physician-patient concordance, defined as the level of agreement between the physician and the patient about their medical needs and treatment plan,¹⁷ has also been associated with greater patient compliance and improved health outcomes.^{17,25}

Although these concepts have not been explicitly applied to veterinary medicine, the veterinarian-client relationship may also affect owners' willingness to seek veterinary care, follow veterinarians' recommendations and trust veterinarians' judgment.²⁶⁻²⁸ There is some concern within the veterinary profession that low-cost clinics may lead to a breakdown of the veterinarian-client relationship given the high volume of pets and the perceived lack of veterinarian time per client.²⁹ To our knowledge, there is no empirical evidence regarding the veterinary-client relationship at low-cost clinics.

Community clinics have also been identified as a promising educational tool for both medical and veterinary students.³⁰ Student-led free clinics are widespread among medical schools in the U.S.³¹ and can improve students' attitudes toward and willingness to work with underserved communities.^{32,33} A recent qualitative study found participation in a One Health clinic helped veterinary students to overcome their biases regarding pet ownership in underserved communities, promoted student empathy and provided an opportunity for students to improve their clinical and communication skills.³⁴ However, low-cost clinics that are run without careful consideration for the community involved have the potential to be damaging for patients and counterproductive for students and volunteers. Investigating student participation in a low-cost dental clinic, Rivkin-Fish³⁵ found students often expected patients to be grateful to them for volunteering their time. One student even contemplated quitting the clinic due to the lack of gratitude a patient

had shown. This sense of entitlement can promulgate the power imbalance experienced by underserved patients and highlights the need for concurrent education about the inequities faced by disadvantaged communities. The author also found students were oftentimes reluctant to perform familiar, yet necessary procedures and expected to attempt more technical procedures, often without the required expertise. The potential ramifications for the patient's quality of care were significant.³⁵ While these issues were observed during a low-cost dentistry clinic, similar challenges may also arise in veterinary medicine. Robust, scientific investigations are therefore crucial to describe the experiences of students and clients who attend low-cost clinics. The aims of this study were to 1) examine the utilization of a One Health clinic with human and veterinary health-care services by underserved individuals, 2) investigate the effect of the clinic on the veterinary-client relationship, and 3) understand the perception of the clinic by veterinary students, pre-veterinary students, and clinic volunteers.

Materials and Methods

Delaware Humane Association One Health Clinic

The Delaware Humane Association One Health Clinic provides free veterinary wellness care to the low-income community in Wilmington, DE and aims to share information with pet owners about the connection between pet health, human health, and the health of the community. The clinic was first run in October 2017 and is supported by sponsorships, donations, and volunteers to ensure services can be provided free of charge.³⁶ It operates monthly at the Henrietta Johnson Medical Center, a federally funded community health center that provides affordable, comprehensive health-care services to underserved, uninsured and underinsured individuals.³⁷ All Henrietta Johnson Medical Center clients were eligible to access veterinary care at the One Health clinic, as well as residents of specific low-income zip codes. The Delaware Humane Association One Health clinic is run by a team of volunteers including veterinarians, veterinary nurses, veterinary students from the University of Pennsylvania, pre-veterinary students from the University of Delaware, human health care nursing students from Wilmington University, social workers, health-care representatives from the Henrietta Johnson Medical Center and Delaware Humane Association staff. Pet owners are encouraged to simultaneously seek veterinary and human health-care services when attending the One Health clinic.

The scope of veterinary care included physical examinations, treatment of basic common diseases, basic diagnostics, such as skin and ear cytology, and distribution of preventative treatments. Care was provided by a veterinary team which included a veterinarian, 1 to 2 veterinary students from the University of Pennsylvania, 1 to 2 pre-veterinary students from the University of Delaware, and often a veterinary technician or technician assistant. While care was delivered to pet owners by the team, the veterinarian was responsible

for overseeing the appointment. They worked directly with the students throughout the examination, treatment plan development and the prescription of medications. The veterinary students and the veterinarian often undertook the client communication together, dividing up the roles commensurate with the student's comfort level and experience. Pre-veterinary students did not discuss veterinary care with the clients. All students were directly supervised by the veterinarian, and the veterinarian was always present for any communication with the client. The veterinary team also offered information about pet ownership, such as the availability of local parks for dog-walking.

The human health-care services at the clinic vary depending on staffing but may include blood pressure testing and influenza vaccination. Pet owners also have the opportunity to talk to medical center staff about their health care. For instance, staff provide clients with information about the usual vaccine schedule for adults, advice for enrolling in health insurance and allow them to book future health-care appointments. Seasonal items may also be provided to promote health, such as gloves, hats, and lip balm. Veterinary appointments are scheduled in advance, although there is a limited capacity for walk-ins. A maximum of 30 animals can be seen per clinic. New clients comprise the majority of clinic visits, so clients are limited to one veterinary wellness check per year.

Study protocol

This study captured the experiences of pet owners who attended the Delaware Humane Association One Health Clinic and volunteers who participated in the clinic between December 2018 and November 2019. The clinic did not run in March or July 2019, so data were not collected during these months. Pet owners were recruited to participate in the study by a research assistant while waiting for their veterinary appointment. The research assistant briefly explained the purpose of the study, asked the clients if they were interested in participating and then provided a study consent form. After obtaining participant consent, the research assistant verbally administered the questionnaire to the clients and recorded their responses using Google forms. Following the appointment, while clients were being checked out and/or waiting for their prescriptions, the research assistant verbally administered the post-appointment questionnaire. The research assistants were often veterinary students, although they did not identify themselves as members of the veterinary community unless asked directly.

The volunteer survey was distributed via email to all clinic volunteers, which included veterinary students who were currently enrolled in a Veterinariae Medicinae Doctoris degree (equivalent to a Doctor of Veterinary Medicine) at the University of Pennsylvania, pre-veterinary students who were enrolled in an undergraduate Pre-Veterinary Medicine degree at the University of Delaware and general volunteers, which included veterinarians, veterinary technicians and lay people. University of Pennsylvania veterinary students volunteered to participate at the clinic through

their university and were contacted by researchers to complete the survey within 72 hours of attending the clinic. University of Delaware pre-veterinary students participated in the clinic as part of an internship, meaning they attended the clinic monthly for a semester and completed the survey at the end of the semester. General volunteers enrolled to participate in the One Health clinic through the Delaware Humane Association and could partake in administrative or veterinary roles, depending on their qualifications and skills. General volunteers were also emailed the survey within 72 hours of the clinic. A total of approximately 14 to 20 volunteers participated in the clinic each month. The limited availability of research staff meant data were not collected from University of Pennsylvania veterinary students during April 2019 or June 2019. All participants were over the age of 18 years and gave informed written consent. The study and all related materials, including the questionnaires, were reviewed by the University of Pennsylvania Institutional Review Board (protocol number 831809) and determined to be exempt.

Questionnaires

Pet owner questionnaire—The full questionnaires are provided (**Supplementary Appendix S1**). The pre-appointment pet owner questionnaire included basic demographic questions regarding age, gender, race, ethnicity, and the number of times the individual had visited the clinic previously. The questionnaire then included 6 statements regarding barriers to veterinary care that were initially developed by Mueller et al.¹¹ Respondents were asked to indicate the extent to which they agreed with each statement on a 5-point Likert scale from strongly disagree (1) to strongly agree (5). The questionnaire also included 5 statements about the client's trust in the veterinary profession that were adapted from a validated scale from human health care.³⁸ Each question could also be answered on a 5-point Likert scale. The first item was reverse scored, and the questions were then summed to create a composite score. Higher scores were indicative of greater trust in the veterinary profession (possible range, 5 to 25).

The post-appointment questionnaire for pet owners consisted of four sections: 1) utilization of human health-care services at the clinic, 2) client enablement, 3) veterinarian-client concordance, and 4) trust in the veterinary profession. Client enablement was assessed using an adapted version of the Patient Enablement Instrument (PEI).^{21,24,39} The PEI is widely used in human health care to capture the patient's perception of the quality of care they received.^{22,23,40} It includes 6 questions about the patient's ability to cope with life and their illness based on their consultation. Possible answers included much better/much more (2), better/more (1), same or less (0) and not applicable (0). The 6 questions were summed to create a total score with a possible range from 0 to 12. Veterinarian-client concordance was assessed using 5 questions adapted from Kerse et al,¹⁷ such as "How well do you think the veterinarian understood why you came in today?" Each question could be answered on a scale from completely (1) to not at all (4). Finally, the client's trust in the

veterinary profession was captured using the same 5 questions from the pre-appointment survey initially adapted from Dugan et al.³⁸

Volunteer questionnaire—The volunteer questionnaire included 4 sections: 1) demographics; 2) perceptions of the educational value of the clinic; 3) skills learned during the clinic; and 4) satisfaction with the experience. The individual's perceptions of the educational impact of the clinic were assessed using 4 statements that were adapted from Smith et al,⁴¹ such as “The Delaware Humane Association One Health Clinic helped me stay connected with my sense of purpose.” Students and general volunteers had to indicate the extent to which they agreed with each statement on a scale from strongly disagree (1) to strongly agree (5). The skills that students and general volunteers learnt during the clinic were assessed using 27 questions developed by Wee et al⁴² to investigate the experiential learning attributes of participation in a community clinic among medicine students. This section of the questionnaire covered 7 skill domains, including leadership, communication, teamwork, critical thinking, ability to identify social issues, action skills and ability to see consequences. Each question could be answered on a 4-point scale from disagree (1) to agree (4). The final section of the questionnaire regarding satisfaction with the training experience included 6 statements adapted from Doyle et al⁴³ and Smith et al.⁴¹ For example, “The training experience was an overall satisfying one.” Each question could be answered on a 5-point Likert scale from strongly disagree (1) to strongly agree (5).

Statistical analysis

Descriptive statistics were calculated to examine the sociodemographic characteristics of the sample, barriers to veterinary care, patient enablement, veterinarian-client concordance, and student/volunteer experiences. Pre- and post-client surveys were linked using the appointment number. The data were approximately normally distributed, so a paired sample *t* test was used

to compare pre- and post-appointment trust scores. Data are presented as mean ± SEM. Individual items in the trust questionnaire were also assessed using a Pearson Chi Square test. Independent *t* tests were used to compare clients who were attending the clinic for the first time and those who had attended previously in terms of their pre- and post-composite trust scores and enablement scores. Fisher-Freeman-Halton Exact tests were used to examine concordance between first-time clients and return clients. All statistical analyses were conducted in commercially available software (SPSS Statistics for Windows version 27.0; IBM Corp). *P* values less than 0.05 were considered statistically significant.

Results

Sample characteristics

The sample included 172 individuals comprised of 87 students/volunteers (*n* = 29 pre-veterinary students, *n* = 26 veterinary students, *n* = 32 general volunteers) and 85 pet owners. Seven pet owners completed the pre-appointment survey only and were excluded from further analysis leaving a sample of 78 pet owners. The demographic characteristics of the sample are provided (**Table 1**). Fifteen out of 29 pre-veterinary students (51.7%) and 18 out of 26 veterinary students (69.2%) were volunteering at the Delaware Humane Association One Health Clinic for the first time. The number of times that general volunteers had previously volunteered ranged from 1 to almost every time since the clinic's inception. Of the pet owners in the study, 40 out of 78 were attending the clinic for the first time (51.3%, total range, 1 to 6) and 52 out of 78 (66.7%) had scheduled appointments. Most pet owners learnt about the clinic through friends/family (53.8%), followed by the Henrietta Johnson Medical Center (20.5%) and online (15.4%). Approximately half of the sample owned 1 pet (52.6%), 17.9% owned 2 pets, 11.5% owned 3 pets, 10.3% owned 4-6 pets and 7.7% owned 7 or more pets.

Table 1—Demographic characteristics pet owners, pre-veterinary and veterinary students, and other volunteer who attended the Delaware Humane Association One Health Clinic between December 2018 and November 2019.

	Pet owners (<i>n</i> = 78)		Pre-veterinary student (<i>n</i> = 29)		Veterinary student (<i>n</i> = 26)		General volunteer (<i>n</i> = 32)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Age (y)								
18–24	3	3.8	28	96.6	19	73.1	3	9.4
25–34	21	26.9	1	3.4	7	26.9	5	15.6
35–44	17	21.8	0	0.0	0	0.0	6	18.8
45–54	17	21.8	0	0.0	0	0.0	6	18.8
55+	20	25.6	0	0.0	0	0.0	12	37.5
Gender								
Female	55	70.5	28	96.6	24	92.3	29	90.6
Male	23	29.5	1	3.4	2	7.7	2	6.3
Prefer not to say	0	0.0	0	0.0	0	0.0	1	3.1
Race								
African American	58	74.4	5	17.2	0	0.0	1	3.1
Asian	0	0.0	0	0.0	1	3.8	0	0.0
Caucasian	8	10.3	23	79.3	25	96.2	29	90.6
Other	12	15.4	1	3.4	0	0.0	2	6.3
Ethnicity								
Spanish/Latino	7	9.0	4	13.8	3	11.5	0	0.0
Not Spanish/Latino	71	91.0	25	86.2	23	88.5	32	100.0

Utilization of human health-care services

Seventeen out of 78 (21.8%) clients who attended the One Health Clinic had their blood pressure checked, 7 clients (9.0%) signed up for a future medical appointment and 4 clients (5.1%) signed up for health insurance. The most common reason that pet owners did not utilize these services was a lack of need; 41.0% of pet owners had their blood pressure checked recently, 62.8% already had a scheduled medical appointment/had no need and 88.5% had other health insurance.

Barriers to veterinary care

The barriers to veterinary care are displayed (**Figure 1**). Cost was the most common barrier with a median response of 4.0 (agree), while the median response to every other barrier was 2.0 (disagree). All questions had a range of 1 to 5 (strongly disagree to strongly agree), except for 'My pet is healthy so does not need to see the vet' which had a range of 1 to 4 (strongly disagree to agree).

Client-veterinarian relationship

Clients' trust in the veterinary profession increased significantly following the One Health clinic ($t = -5.50, P < 0.001$) with a mean pre-appointment score of 19.21 ± 0.35 and a post-appointment score

of 20.91 ± 0.33 . Clients also reported high levels of patient enablement following the appointment with a mean Enablement Index of 6.8 (median 7.0, SD 3.3, range, 0 to 12). There were no significant differences between first-time clients and returning clients in pre- ($t = -0.81, P = 0.42$) or post-appointment trust scores ($t = -0.05, P = 0.96$) or enablement scores ($t = -0.32, P = 0.75$). The breakdown of client's responses to items regarding trust and enablement are shown (**Tables 2 and 3**, respectively).

Clients reported high levels of veterinarian-client concordance following the One Health clinic appointment. Most said the veterinarian understood why they came in for the appointment (92.3%) and understood them (94.9%). The majority of pet owners completely agreed with the veterinarian about the main problem or need (91.0%) and what to do about the problem or need (94.9%). There were no differences between first-time and returning clients in veterinarian-client concordance ($P \geq 0.10$).

Educational attributes of One Health clinic

The perceptions of students and general volunteers regarding the One Health clinic are shown (**Table 4**). Almost all respondents agreed or strongly agreed that the clinic was a valuable educational experience (97.7%, $n = 85$ out of 87), that the clinic positively influenced their attitude toward (96.5%, $n = 84$ out of 87) and compassion for underserved patients (96.5%, $n = 84$ out of 87) and that the clinic positively influenced their perception of veterinary medicine (95.4%, $n = 83$ out of 87).

Students' and volunteers' perceptions of the skills attained during the clinic are also presented (**Supplementary Table S1**). Most students and volunteers improved their leadership skills (74.7%, $n = 62$ out of 83), developed communication, listening and negotiation skills (81.0%, n

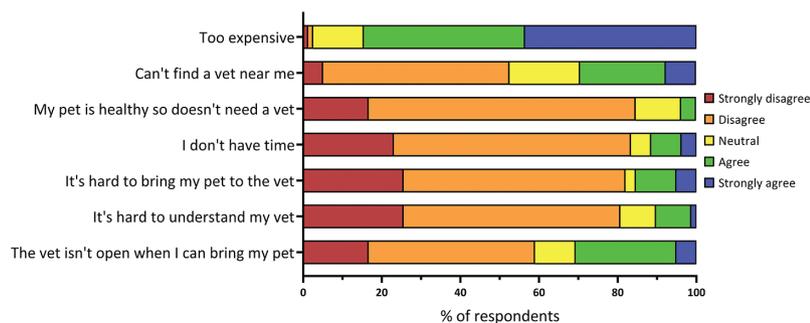


Figure 1—Barriers to accessing veterinary care. Clients ($n = 87$) indicated the extent to which each barrier affected their ability to access veterinary care on a scale from 1 (strongly disagree) to 5 (strongly agree).

Table 2—Pet owners' trust in the veterinary profession pre- and post-appointment ($n = 78$).

	Strongly disagree		Disagree		Neutral		Agree		Strongly agree		X ² (P value)
	Pre (%)	Post (%)	Pre (%)	Post (%)	Pre (%)	Post (%)	Pre (%)	Post (%)	Pre (%)	Post (%)	
Sometimes vets care more about what is convenient for them ^a	19	33	46	47	21	10	9	5	5	4	6.59 (0.16)
Veterinarians are extremely thorough and careful	0	0	1	1	17*	6*	63	51	19*	41*	10.81 ^b (0.01)*
You completely trust veterinarians' decisions about which medical treatments are best for your pet	1	0	4	1	9	6	64*	46*	22*	46*	11.32 ^b (0.01)*
A veterinarian would never mislead you about anything	1	1	15	8	21	18	50	45	13	28	6.85 (0.13)
All in all, you trust veterinarians completely	1	0	5	1	12	9	60	49	22	41	8.38 ^b (0.05)

Data show % of respondents who responded.

^aReverse scored for summation of total score.

^bFisher-Freeman-Halton Exact test used where more than 20% of cells had an expected count less than 5.

*Indicates there was a statistically significant difference between pre- and post-appointment scores.

Table 3—Pet owners' responses to the Patient Enablement Instrument (PEI; *n* = 78).

	Much better (%)	Better (%)	Same or less (%)	Not applicable (%)
Do you feel you are able to cope with life with your pet?	42.3	29.5	28.2	0.0
Do you feel you are able to understand your pet's illness?	37.2	29.5	12.8	20.5
Do you feel you are able to cope with your pet's illness?	26.9	30.8	16.7	25.6
Do you feel you are able to keep your pet healthy?	52.6	35.9	9.0	2.6

	Much more (%)	More (%)	Same or less (%)	Not applicable (%)
Do you feel confident about your pet's health?	53.8	33.3	12.8	0.0
Do you feel you are able to help yourself?	32.1	34.6	17.9	15.4

Table 4—Students' and general volunteers' perceptions of the One Health clinic (*n* = 87).

	Mean	Median	Standard deviation	Range	% Agreed or Strongly Agreed
Valuable education experience	4.8	5	0.63	1-5	97.7
Positively influenced my attitude toward working with underserved patients	4.7	5	0.63	1-5	96.5
Helped me stay connected with my sense of purpose (while in veterinary school ^a)	4.6	5	0.76	1-5	93.0
Positively affected my overall sense of well-being (during veterinary school ^a)	4.6	5	0.77	1-5	90.8
Enhanced my compassion for low-income clients	4.6	5	0.56	3-5	96.5
Positively influenced my perception of veterinary medicine	4.6	5	0.59	3-5	95.4
My contribution was of value to the veterinary intervention provided	4.2	4	0.92	1-5	83.3
Teaching other students was an additional advantaged to the experience	4.0	4	0.89	1-5	68.6
An adequate amount of autonomy was permitted	4.4	5	0.89	1-5	86.4
The training experience was an overall satisfying one	4.5	5	0.90	1-5	88.6

^aText in brackets shown for veterinary students only. Answers of N/A were excluded. Possible scores ranged from 1 to 5.

= 68 out of 84), and could appreciate teamwork and cooperation following the One Health clinic (94.2%, *n* = 81 out of 86). The majority of participants also agreed that the clinic helped them to interact with patients (80.7%, *n* = 67 out of 83), and better appreciate challenges faced by poor Americans in health care (87.4%, *n* = 76 out of 87). Half of the veterinary students agreed that the clinic improved their ability to make a clinical diagnosis (*n* = 13, 50%) and fewer than half agreed that participation in the clinic improved their knowledge of long-term management of chronic disease (*n* = 12 out of 26, 46.2%) or aided their understanding of the criteria for recommending screening tests (*n* = 10 out of 26, 38.5%).

Discussion

The primary goal of this study was to examine the utilization of a One Health clinic in Wilmington, Delaware and to investigate the effect of the clinic on the veterinary-client relationship. Underserved pet owners readily used the One Health clinic to access veterinary care which shows the value of removing the cost barrier. Indeed, cost was the most common barrier to veterinary care with 84.6% of pet owners indicating veterinary care was too expensive which is comparable to previous research.¹¹ A relatively small proportion of pet owners (30.8%) utilized the human health-care services offered at the One Health clinic primarily due to a lack of need, ie, they already had

access to the services offered. The limited utilization of human health-care services at the One Health clinic may result from the target population which included Henrietta Johnson Medical Center clients who had attended the community health-care center previously. Nevertheless, the clinic provided blood pressure checks to 17 pet owners and scheduled future medical appointments for 7 pet owners who may not have otherwise sought care. One Health clinics show clear potential to increase access to human health care through simultaneous provision of veterinary services. However, the low uptake of human health-care services at the One Health clinic illustrates the need for future research to establish the health care needs of underserved pet owners within this community and identify the services that may be most beneficial in a One Health clinic setting. It is also possible that the provision of free or low-cost veterinary services to community health care clients may have improved access to veterinary care for this population irrespective of the simultaneous availability of human health-care services.

We also provide the first longitudinal evidence, to our knowledge, that community clinics promote trust in the veterinary profession. Client trust increased significantly following the appointment, but more specifically, we found an increase in the number of pet owners who strongly agreed that veterinarians are extremely thorough and careful, and completely trusted veterinarians' decisions about the best medical treatments for their

pet. A cross-sectional study investigating low-cost and free community-based veterinary care programs also found pet owners had extraordinarily positive experiences and reported high levels of trust in the veterinarian and veterinary care team following their appointment.⁴⁴ Recent research also suggests that the public perceive veterinarians as thorough, honest, and competent.⁴⁵

Trust in veterinarians is crucial to the success of veterinary treatments and the welfare of companion animals as it affects owner satisfaction and compliance with treatment recommendations.^{28,46,47} The importance of veterinarian-client trust is likely amplified in underserved communities due to the neglect of these communities by animal service providers and the resultant sense of distrust among many underserved pet owners.^{48,49} A lack of trust in the veterinarian has also been identified as a significant barrier to veterinary care for some racial groups, including Black/African Americans and Native Americans/American Indians. Such distrust may arise from the historic racism and health inequalities that exist in human health care which may have translated to veterinarians.¹⁰ In this study, approximately 75% of the dog owners were Black or African Americans which further emphasizes the significance of our findings.

The majority of clients reported increased enablement following the veterinary appointment, with the largest increases occurring in pet owners' perceived ability to keep their pets healthy and their confidence in their pet's health more generally. The mean enablement score reported in the current study was significantly greater than previous reports from human health-care studies.^{23,40,50} This finding highlights the considerable impact that a single veterinary appointment can have in terms of helping underserved pet owners to understand and cope with their pet's health. It also speaks to the quality of care that pet owners received at the clinic. In human health care, patient enablement is dependent on physician empathy^{23,51} and this relationship holds true across patients from both affluent and deprived sociodemographic areas.²³ Although it is widely recognized that empathy is crucial for the development of a strong veterinarian-client bond,^{52,53} the association between veterinarian empathy and client enablement has not yet been studied.

Pet owners also reported very high levels of concordance, indicating they agreed with the veterinarian about the pet's primary needs and the best treatment plan. The level of veterinarian-client concordance reported in the current study was also high compared with previous reports from human health care.¹⁷ To our knowledge, concordance has not been directly measured in veterinary medicine, although qualitative research has found clients expect veterinarians to form a partnership in the care of their pets and that clients want to be able to make informed decisions regarding their pet's treatment options. Clients also emphasize the importance of veterinarians using 2-way communication in which they listen to pet owners and communicate in language that the clients can understand.²⁶ A recent study of German pet owners found partnership-centered care in veterinary medicine can reduce clients' need to seek further information; an indicator of client satisfaction with the veterinary appointment.⁵² The high levels of concordance reported by

pet owners in this study suggest clients were very satisfied with their veterinary appointments.

Overwhelmingly, students and volunteers found the One Health clinic was a valuable and satisfying educational experience that positively affected their sense of well-being and helped them to stay connected to their sense of purpose. Students and volunteers described an increase in compassion for low-income clients and improved attitudes toward underserved patients following the One Health clinic which mirrors the results of previous research.³⁴ This finding is particularly noteworthy as empathy generally declines throughout veterinary school,^{54,55} and researchers and educators have acknowledged the need for programs that promote empathy within the veterinary curriculum.^{56,57} Community clinics may help to fill this gap. Longitudinal studies including detailed assessments of student empathy prior to and following participation in a community clinic are needed.

The vast majority of students and general volunteers also reported that the One Health clinic enhanced their leadership skills, communication skills, teamwork skills, action skills, and improved their ability to see consequences, identify social issues and think critically. Students and volunteers gained knowledge about the gaps in the health-care system and reported an improved ability to interact with patients and their families. Veterinary students almost unanimously agreed that the clinic allowed them to think of others, appreciate teamwork with peers, build confidence and take on new responsibilities; skills that are crucial for veterinarians. A smaller proportion of veterinary students said the clinic helped them to understand criteria for recommending screening tests or improved their knowledge on long-term management of chronic diseases. This is likely due to the restricted scope of treatments available at the clinic compared with full-service private practice, and the clinic's limit of one wellness visit per year. The One Health clinic aims to enable underserved pet owners to access additional low-cost veterinary care so patients with chronic conditions are encouraged to seek further care elsewhere. Overall, the positive findings were largely comparable to previous research in medical students.⁴²

The positive experiences of pet owners, students and volunteers at this community One Health clinic provides crucial data to support the use of low-cost veterinary clinics. The high levels of trust, enablement and concordance reported by pet owners could have long-lasting positive effects on owners' willingness to seek veterinary care and comply with treatment recommendations. Future research that captures the veterinarian-client relationship over a longer period of time would further our understanding of the effects of community veterinary clinics. It would also be interesting to elucidate differences in the veterinarian-client relationship between low-cost or free clinics and private practice clinics. It is possible that underserved pet owners reported a greater increase in trust and enablement following the veterinary appointment because of their previous inability to access veterinary care. However, a considerable portion of pet owners in the current study had visited the One Health clinic before so this seems unlikely. The health status of pets that attended the clinic, their diagnoses and treatment plans may also have influenced pet owners' perceptions of the veterinary profession and the students' educational experience. This data was not included in the current study

but presents an opportunity for future research. The verbal administration of the survey to pet owners may have introduced social desirability bias, meaning clients may have provided answers that they believed would be viewed more favorably by the research assistants. Our findings may also have been affected by non-response bias in which individuals who did not participate in the study may have systematically differed from study participants. For instance, it is possible that pet owners with negative clinic experiences were less likely to respond to the survey. The generalizability of the results is limited as the study was conducted at a single facility and future studies including multiple clinics across diverse communities and geographical regions are needed to support our findings. Future studies may also consider investigating pet owners' level of engagement with health-care staff, such as their willingness to discuss their own health, rather than focusing on the utilization of specific services, such as blood pressure testing.

Through this study, we have highlighted the potential value of a One Health clinic to improve access to veterinary care for pet owners in an underserved community, and as an educational opportunity for students. The Delaware Humane Association One Health clinic produced a significant increase in pet owners' trust in the veterinary profession. Owners reported high levels of concordance with the veterinarian, indicating they agreed with the veterinarian and shared decision-making about their pet's health, and high levels of enablement, suggesting they felt more confident in their ability to cope with their pet's health. Veterinary students and clinic volunteers described increased compassion toward underserved pet owners following the clinic and learnt a multitude of skills across various domains.

Acknowledgments

This project was funded by the Penn Vet Rosenthal Shelter Medicine Student Research Fellowship program and the PetSmart Charities Summer Research Program. The Arnall Family Foundation provided salary support for Dr. Powell. Salary for Dr. Reinhard was provided by grant funding from the Bernice Barbour Foundation. Dr. Jankowski was a board member of the Delaware Humane Association during the data collection period. The authors declare that there were no other conflicts of interest.

The authors would like to thank the Delaware Humane Association and Henrietta Johnson Medical Center for developing and running the One Health clinic and supporting the authors to conduct the research study. The authors specifically thank Danielle Scharp, Patrick Carroll, and Carla Andrews for their contributions to the clinic development and data collection. We also thank the students from the University of Pennsylvania and the University of Delaware who participated in the clinic and study.

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Supplementary Materials

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