



Participants in a medical student-run clinic and career choice

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ABSTRACT

Objective: With the current rate of medical professional training, it is estimated there will be a lack of 45,000 primary care physicians by 2020. Student-run medical clinics (110 nation-wide) may help to fill this need, as well as educate medical students, and have been proposed as a tool to foster student interest in primary care. The impact of involvement with student-run clinics on medical student career choice is unknown.

Methods: A prospective, cross-sectional, 12-item, anonymous, web-based survey of 2,060 current/former medical students from the New York Medical College classes of 2005-2015 was conducted. The survey assessed basic demographic information, level of participation with the student-run clinic (La Casita de la Salud), current/future career choice, and self-perceived determinants of career choice. **Results:** Participation with La Casita was not significantly associated with primary care career choice (50.21% vs. 49.79%; $P = 0.659$). Of the participants who went into primary care, 26% reported that their experience with La Casita influenced their decision to enter the primary care field and 11% changed their initial career intentions to that of primary care. Those who entered pediatrics and emergency medicine were more likely to have participated with La Casita than not (66% vs. 34%; $P = 0.01$ and 71% vs. 29%; $P < 0.01$, respectively). **Conclusions:** Participation with a student-run clinic may not affect the career choice of an overall medical school class, but it does play an influential role for a minority of students. Student-run clinics may also serve to offer an additional provider source to communities that have limited physician access.

KEY WORDS: Career choice, the medical student, primary care, student-run clinic

INTRODUCTION

In the United States there exists a growing need for more primary care physicians (PCP) to care for an expanding pool of patients [1-4]. Behind this shortage is a decrease in medical students wishing to choose a career in primary care [4-6]. In 2006, the American College of Physicians issued a report stating that the primary care system in the United States is “at a grave risk of collapse [7].” The patient protection and Affordable Care Act (ACA), which was passed as law in 2010, may have created a larger gap between the number of PCPs and patients requiring health care [8]. It is estimated that by 2014, nearly 16 million additional patients will obtain health insurance coverage while the same legislation anticipates augmenting the provider workforce by only 15,000 in the following year [9]. In the next 10 years, the physician supply will increase by 7% while the number of Americans over the age of 65 will increase by 36% [10]. The Association of American Medical Colleges estimates that by 2020, there will be a lack of 45,000 PCPs and 46,000 specialists. At the same time, there will be a concurrent

retirement of one-third of all currently practicing physicians, of which there are 384,916 PCPs, with a majority residing on the coasts [10-12]. PCPs also work fewer hours in active clinical practice than in the past.

The health consequences of poor access to primary care are well established. Hawkins *et al.* showed that patients who have access to primary care are more likely to report having good health and lower mortality rates as compared with those living in regions with low access to primary care [13]. This lack of access classically affects predominately minority communities. Gaskin *et al* found that areas within the United States that contained a shortage of PCPs (zip code areas without a listed PCP) were more likely to be predominantly African American communities [14].

Proposed solutions to the lack of PCPs are varied and many. Jacobson and Jazowski suggest that the field of primary care be supplemented by non-physician providers, such as nurse practitioners and physician assistants [15]. Reinhardt

recommends the use of international medical graduates to augment the U.S. physician supply [16]. Others, such as Bach and Kocher, argue that medical schools should be free of charge, putting the cost instead on those individuals who choose to pursue fellowship training [17]. The ACA authorized a grant program for medical schools to develop rural physician training programs, a measure aimed at equalizing the geographic distribution inequalities [18]. Several federal loan forgiveness programs aim to remediate the geographic maldistribution of PCPs as well as incentivize medical students to enter primary care residencies [19,20]. Finally, Campos-Outcalt has suggested that the medical student exposure to a student-run clinic is associated with entry into primary care [21].

The purpose of this survey research project is to determine whether there is an association between volunteerism at the New York Medical College's (NYMC) student-run clinic, La Casita de la Salud, and career choice among medical students, specifically primary care. For the purpose of this study, primary care careers are defined in concordance with the United States Bureau of Health Professions: Family Medicine, Obstetrics-Gynecology, Internal Medicine, Pediatrics, Medicine-Pediatrics, Internal Medicine Subspecialties, and Pediatric Subspecialties [22]. Through the evaluation of the relationship between those who have volunteered and their subsequent career choice, an additional method for creating more PCPs may be reinforced. It is hypothesized that those students who devote a significant amount of time to La Casita ultimately chose/will chooses a career in a primary care focused field. Secondary outcomes include assessing the relationship between career choice and year of graduation, gender, level of participation, influential determinants, and timing of specialty choice decision.

La Casita de la Salud

La Casita de la Salud was founded in 2005 by NYMC students who shared a passion for helping the uninsured and underserved. The clinic is located in East Harlem, New York and operates every Saturday morning from 8 am to 12 pm. A daily clinic consists of one physician and a medical student team with one supervisor, four clinical care members, two patient educators, two community outreach members, two patient advocates, a social worker, and the Spanish translator. The supervisor, usually a 3rd or 4th-year student, is responsible for overseeing the other students at the clinic. He/she maintains constant communication with the clinical care teams, the physician, and other volunteers to ensure a smooth flow of the clinic. The supervisor must report directly to the Clinical/Administrative Directors of the clinic as well as to the daily supervising physician. The role of the supervisor is important for the medical student, as it fosters the ability to work as a leader and manage often hectic situations.

On the clinical care team, a 3rd/4th-year student is paired with a 1st/2nd year student to encourage teaching and support. The students see the patient together. The entire team then formulates a plan of care for that patient. Any referrals, blood

draws or basic treatment can be performed at the clinic. Any complex care, such as specialty exams or radiologic imaging, is referred to outside institutions. The didactic experience for 3rd/4th-year students has been reported to be an excellent preparation for the role of teacher, which they will face in residency [23].

The goal of the community outreach, patient advocate, and patient educator is to help the patient both during their wait time and also throughout their clinic visit. Students present pertinent topics to patients while in the waiting room, in both Spanish and English. Any questions are answered, pamphlets are available, and each student is able to take an active role in the social aspect of medicine.

La Casita serves as a vital attractant of prospective medical students. From 2010 to 2011, a questionnaire was administered to pre-medical students interviewing at NYMC. The goal of the project was to elicit the importance that prospective students place on finding a medical school with an affiliated student-run clinic. The results demonstrated that 91% of applicants for the Class of 2015 expressed that having a student-run clinic is at least "very important" in their selection of medical school [24]. In addition, 97% of medical student interviewees reported that if accepted to NYMC, they would participate with La Casita de la Salud [24]. Other medical schools have found that student-run clinics are not just vital recruitment tools, but also methods of encouraging diversification of the incoming class [25]. In a survey administered to the Class of 2015 at the University of Missouri School of Medicine, 71% of non-white students identified the school's student-run clinic as an important factor in their choice to attend the University [25].

La Casita de la Salud fosters a positive, team-focused learning environment. It is a unique learning situation that is intended to inspire students to pursue a career in primary care and/or working with underserved populations. However, the precise manner by which La Casita affects the career choice of its participants is unknown.

METHODS

A prospective, cross-sectional, 12-item, anonymous, web-based survey of 2,060 current and former medical students from the NYMC classes of 2005-2015 was conducted. All medical students were surveyed, including both those who did and did not participate with La Casita. The questionnaire was designed to assess basic demographic information, level of participation with La Casita de la Salud, current or future specialty choice, and self-perceived determinants of specialty choice. The survey was administered via Survey Monkey. A copy of the survey is available in appendix 1. Current students were sent emails to their institutional email address containing a Survey Monkey URL link. Alumni were emailed the Survey Monkey link using on-record email addresses from the Alumni Office Database. If an email address was not provided in the Alumni Office Database, former students were mailed a paper request asking them to access the online survey. Three attempts were made

to contact current and former students via email. Institutional Review Board approval was granted for this project on May 7, 2012. Data were collected from June 4, 2012 to March 1, 2013 and downloaded from Survey Monkey and analyzed via the statistical software Stata SE 12.

RESULTS

A total of 427 surveys were collected. Table 1 reports the frequency and percentage results across all survey questions. The majority of respondents were female (61%), from the Class of 2013 (17%), and had previously participated with La Casita de la Salud (56%). Of respondents, 49.52% reported entry into a primary care field. The three most commonly selected specialties were Pediatrics (12.68%), Internal Medicine (12.20%), and Emergency Medicine (10.77%). Of those who participated with La Casita de la Salud, the majority were clinic volunteers (71.31%), followed by executive board members (25.74%), and finally directors (2.95%). The majority of volunteers (45.30%) reported visiting the clinic 2-3 times per month. Of those who volunteered, 48.12% reported donating <2 h per month of their time to the clinic. A majority of respondents (66.98%) noted that they had a preconceived notion of specialty prior to medical school, but most (51.97%) did not enter that original specialty. The three most important determinants of career choice were interest (75.62%), clerkships (12.07%), and lifestyle (8.62%). Of those respondents who participated with La Casita, 18.03% noted that the clinic influenced their career decision.

Females were more likely to enter a primary care field (57.75%) than a specialty field (42.25%, $P < 0.001$). The association remains significant when analyzed among La Casita participants only. The odds of going into primary care were 2.47 times higher for females than they were for males (95% confidence interval [CI] = 1.64-3.71; $P < 0.0001$).

Figure 1 illustrates the percentage of students choosing either primary care or specialty fields by the year of graduation from NYMC. There is no significant association noted between year of graduation and choice of career for either the entire study sample or the La Casita volunteer only group.

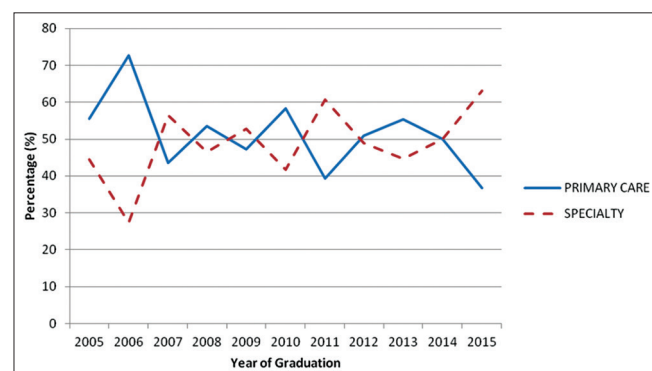


Figure 1: Percent of New York Medical College's graduates choosing primary care and specialty career, by year

Table 1: Frequency and percentage results across all survey questions and questionnaires

	Frequency	Percentage
Gender		
Male	162	38.20
Female	262	61.79
Graduating year		
2005	9	2.13
2006	11	2.60
2007	23	5.44
2008	44	10.40
2009	37	8.75
2010	24	5.67
2011	28	6.62
2012	50	11.82
2013	75	17.73
2014	62	14.66
2015	60	14.18
Career choice		
PCP	207	49.52
Specialty	211	50.48
Career choice		
Family Medicine	22	5.26
Internal Medicine	51	12.20
Internal Medicine sub-specialty	34	8.13
Pediatrics	53	12.68
Pediatrics Sub-Specialty	21	5.02
Medicine/Pediatrics	4	0.96
OB/GYN	22	5.26
Anesthesiology	26	6.22
Dermatology	4	0.96
Emergency Medicine	45	10.77
General surgery	17	4.07
Neurology	11	2.63
Ophthalmology	7	1.67
Pathology	6	1.44
PM and R	8	1.91
Psychiatry	18	4.31
Radiology	25	5.98
Surgical specialty	22	5.26
Administration	1	0.24
Undecided	21	5.02
La casita participation		
Not Involved	184	43.29
Involved	241	56.71
Level of participation		
Clinic Volunteer	169	71.31
Executive Board Member	61	25.74
Director	7	2.95
Frequency of participation		
1 time/month	74	31.62
2-3 times/month	106	45.30
4-5 times/month	34	14.53
>5 times/month	20	8.55
Hours of participation		
<2 h/month	115	48.12
2-4 h/month	66	27.62
5-8 h/month	33	13.81
>8 h/month	25	10.46
Idea of specialty prior to medical school		
No	140	33.02
Yes	284	66.98
If applicable, did you choose that original specialty		
No	145	51.97
Yes	134	48.03
If applicable, did La casita influence change		
No	191	91.39
Yes	18	8.61

(Contd...)

Table 1: (*Continued...*)

	Frequency	Percentage
Most important determinant of specialty choice		
Interest	307	75.62
Lifestyle	35	8.62
Salary	3	0.74
Debt-load	2	0.49
Clerkships	49	12.07
Extracurricular	3	0.74
Research	6	1.48
Scores	1	0.25
Did La Casita influence your specialty choice		
No	191	81.97
Yes	42	18.03

PCP: Primary care physicians

Of those who participated with La Casita, 50.21% went into primary care, and 49.79% chose a specialty. There is no significant association between participation with La Casita and choice of either primary care or specialty ($P = 0.659$). Those who went into pediatrics were more likely to have participated with La Casita (66%) than those who did not participate (34%, $P = 0.01$). Those who went into Emergency Medicine were more likely to have participated with La Casita (71%) than those who did not participate (29%, $P < 0.01$).

There was no significant association between level of participation with La Casita de la Salud (determined by the role, monthly attendance, and an hourly involvement) and career choice. Of those with a high level of role participation, 51.47% went into primary care, and 48.53% went into a specialty ($P = 0.871$). Of those with a high level of monthly attendance, 46.30% went into primary care, and 53.70% went into a specialty ($P = 0.362$). Finally, of those with a high level of the hourly involvement, 47.37% went into primary care, and 52.63% went into a specialty career ($P = 0.596$).

Among all respondents, there exists a significant association between those who had a preconceived idea of their career choice and entry into primary care. Of those with a preconceived idea, 55.52% went into primary care, and 44.48% went into a specialty ($P = 0.001$). The odds of going into primary care were 2.09 times higher for those with a preconceived notion of career choice than those without a preconceived notion (95% CI = 1.38-3.19; $P < 0.001$).

Of those who chose a primary care field, factors such as interest, lifestyle, salary, debt-load, clerkships, extracurricular, research, and other were listed as important in the decision of specialty choice. Respondents were asked to list a single primary determinant, but had the option of free-writing additional responses in an open-ended field. Students choosing primary care reported interest, clerkships, and lifestyle as the top three most important determinants of career choice. Those in specialties reported interest, lifestyle, and clerkships as the most important determinants of career choice.

A minority of respondents (11.0%) who went into primary care noted that La Casita did influence the change in their career choice. A larger minority of respondents (25.7%) who went into

primary care noted that involvement with La Casita influenced their career decision.

CONCLUSION

Nationwide, there are over 110 student-run clinics. The most comprehensive report on student-run clinics was completed by Simpson and Long [26]. The authors surveyed each allopathic medical school in the country and found that of schools with student-run clinics, the average clinic contained 16 student volunteers per week, and the median annual budget of these clinics was \$12,000. Approximately 71% of the clinics operate once per week. Over the course of a year, these clinics serve over 36,000 patient visits, and these patients were predominantly from minority populations. Race/ethnicity of patients across all reported clinics was found to be 31% Hispanic, 31% Black, 25% White, 11% Asian, and 3% Native American/Other. Services include blood pressure checks, blood glucose readings, acute care, condom distribution, and health form completion [26]. Figure 2 is a geographic representation of allopathic student-run clinics across the United States, which was compiled by utilizing the Google Maps tool to demarcate the entire clinic registry on the Society of Student Run Free Clinics Organization website [27]. The map demonstrates a clear inequitable geographic distribution of student-run clinics, likely a reflection of medical school location.

It has been well documented that the quality of care provided by student-run clinics meets and/or exceeds national standards [28-30]. Butala *et al.* evaluated a randomly selected cohort of 114 patient charts from the Yale School of Medicine's student-run clinic [28]. The rate of preventive screenings for HIV, diabetes, hyperlipidemia, and cervical cancer were compared with those of national rates. It was found that preventive screening for HIV and diabetes at the clinic met the national rates. Hyperlipidemia and cervical cancer screening rates were lower than national rates, but not different when compared to similar uninsured populations [28]. Zucker *et al.* evaluated a 119 patient cohort from the University of Medicine and Dentistry of New Jersey student-run clinic [29]. The management of patients with diabetes and hypertension was evaluated. It was noted that all of the patients in the cohort were either well controlled or receiving therapy in alignment with the recommendations established by the Joint National Committee 7 and blood pressure goals established in Healthy People 2010. Finally, Liberman *et al.* evaluated the quality of treatment for patients with depression at the Mount Sinai School of Medicine student-run clinic [30]. It was found that the quality of care provided by the student clinic exceeded the care provided to insured patients in New York State on the measures of appropriate level of physician contact, and acute and continuous phase pharmacologic therapies [30].

Patients receiving care from student-run clinics tend to be satisfied with the level of care they receive. Ellett *et al.* evaluated patient satisfaction rates at the student-run clinic of the Medical University of South Carolina [31]. Ninety-eight percent of patients reported that, overall, they were satisfied



Figure 2: Locations of allopathic student-run free clinics across the United States

with the care they received at the clinic. The majority of patients reported feeling “highly satisfied” with laboratory services, staff friendliness, amount of time being interviewed, and the depth of explanations. Patients reported feeling “less satisfied” with the hours of operation and wait times.

The literature contains data on the educational value of such service learning projects and exposure to systems-based practice [23,26,32-34]. Smith *et al.* has shown that 90% of surveyed medical students perceive student-run clinics as providing valuable educational experiences [32]. Schweitzer and Rice evaluated the learning process in a student-run psychiatric clinic [33]. Respondents to the survey agreed that the clinic experience was a valuable supplement to their formal psychiatric rotation (98%) and that it taught them a “skill or attitude”, which they would not have learned in the psychiatric rotation (83%). Hamso *et al.* evaluated the role of the student-run clinic at the Columbia College of Physicians and Surgeons in instructing medical students how to teach their peers [23]. The results of their mixed-method survey showed that most medical students had their first teaching experience at the clinic, students began to perceive themselves as teachers, and it was noted that the ability to teach was related to the quality of the learning experience. Meah *et al.* published a comprehensive literature review delineating the multiple other educational benefits of student-run clinics, including the clinic’s potential for instructing students about systems-based practice such as health care economics, allocation of resources, multi-disciplinary collaboration, and quality improvement projects [33]. While these benefits complement the medical education curriculum, Stoddard and Risma showed that academic performance does not suffer as a result of participation in non-curricular service learning activities [35]. Despite the many known positive attributes of student-run clinics, there is a paucity of published information on the influence of student-run clinics on career choice. There exist only two previous studies in the literature pertaining directly to this relationship. The first study to assess this association was conducted by Campos-Outcalt, which demonstrated that 96.5% of students, who engaged with their community-based free clinic, later chose a career path in the primary care specialties of family practice, pediatrics, and internal medicine [21]. More recently, a study

conducted by Tong *et al* examined 115 medical schools with and without student-run clinics and the proportion of those schools’ graduates who entered the primary care field [36]. The results demonstrated no association between having a student-run clinic associated with the institution and the percentage of former students who chose to practice primary care. Finally, Berman *et al.* report unpublished anecdotal evidence collected from primary care residents who cited participation in a student-run clinic as a “major factor” in their specialty choice [37].

In the analysis of the primary end-point of this study, it was found that 50.21% of La Casita participants entered primary care while 49.79% chose specialty careers. However, this trend toward entry into primary care was not significantly different than the non-participation group ($P = 0.659$). Nearly 26% of respondents who went into primary care after participating with La Casita de la Salud noted that their experience with La Casita influenced their decision to enter the primary care field. Furthermore, 11% of respondents noted that La Casita actually changed their initial career intentions to that of primary care. These results suggest that while participation with a student-run clinic may not affect the career choice of a medical school overall, it does play an influential role for a minority of students. In a medical age where primary care has been losing ground to other specialties, especially among U.S. allopathic students, even an 11% increase is an important finding, which should not be undervalued. In 2013, a total of 25,463 senior medical students matched into accredited residency positions [38]. If the 11% student-run clinic effect were extrapolated across all U.S. medical schools, it would account for 2,800 future PCPs per year or 28,000 over a decade. With a mean annual clinic operating budget of just \$12,000/year, the meager investment in such endeavors stands in stark contrast to the \$168 million which was distributed by the Health Resources and Services Administration in an effort to augment the number of medical students choosing primary care residency programs by only 5,000 per decade [39].

Interestingly, participation with La Casita was associated with entry into specific fields. Those who went into Pediatrics and Emergency Medicine were more likely to have participated with La Casita. Additional research may elucidate factors that account for the increased propensity toward these fields. Understanding these characteristics is vital to structuring medical school programs, which foster interest in PCP careers. Female participants and non-participants were both more likely to enter primary care than their male counter-parts, findings, which are consistent with previous studies and may suggest other means of increasing primary care ambitions [40,41].

The three most important determinants of specialty choice overall, in descending order, were interest, clerkships, and lifestyle. When analyzed according to career choice, the order was modified. Of those who went into primary care, the three most important determinants were interest (75%), clerkships (17%), and lifestyle (7%). Of those who went into a specialty, the order was interest (77%), lifestyle (11%), and clerkships (7%). This suggests that those who enter a specialty tend to value lifestyle more than those who enter primary care. All three of these

variables are modifiable from a medical education perspective, whether through curricular tools, teaching attending enthusiasm or modification of economic pressures. Among those who did not enter primary care, 2% reported either salary or debt-load as their primary career determinants. Notably, no respondents who went into primary care reported either “salary” or “debt-load” as their primary career determinants. Osborne and Jeffe *et al.* similarly found that debt-load was not influential in career choice among those entering primary care fields [42,43]. Campos-Outcalt and Senf, Hauer *et al.*, and Al-Heeti *et al.* also report results consistent with these findings: that clerkship experience is a valuable tool to influence career choice [44-46]. Thus, improving student experiences during the primary care clerkships, as well as understanding the factors that contribute to a positive experience remains vital to encouraging primary care career choices.

The results of this study are likely biased by the NYMC goals and values as well as the unique exposure at La Casita de la Salud. NYMC has specifically taken action to recruit prospective medical students who are more likely to choose a primary care specialty. Juster and Levine outline the steps taken by the Admissions Committee at NYMC to intentionally recruit and admit pre-medical students who are likely to enter primary care fields [47]. The results of these actions saw an increase in matriculated 1st year medical students professing an interest in primary care from 21% in 1996 to 49% in 2000 [47].

An area of continued research stemming from this survey involves investigation of other roles for student-run medical clinics. It is hypothesized that student-run clinics may serve to fill a gap in the primary care shortage by offering an additional provider source to communities that are otherwise with limited physician access. As illustrated by Figure 2, student-run clinics tend to be clustered near medical schools in the east and mid-west, as well as in California. A large segment of the western United States has an absence of such clinics. While the location of student-run clinics is limited by the distribution of medical schools, they continue to supplement the need for primary providers of medical care in many communities. In some cases, the clinic can act to engage providers in areas that are otherwise considered shortage regions. Anecdotal evidence from La Casita provides one example of this community benefit. La Casita de la Salud sits in a region designated as a Primary Care Health Professional Shortage Area and a Mental Health Shortage area as determined by the U.S. Department of Health and Human Services [48]. Since the inception of La Casita, two medical providers precepted in the clinic bimonthly. However, recent efforts from medical students achieved the hiring of two additional paid preceptors to run the clinic weekly. Without student involvement, this region of preexisting poor access would potentially have a further decrease by 4 primary care access points per month. Rebholz *et al.* describes the educational and a service-based value of the clinics as well as their ability to provide care in an underserved region via culturally appropriate and accessible services [49]. While this paper and that of Rebholz *et al.* are among the first to suggest the utility of student-run clinics in resource poor settings, further research is needed to confirm this finding [49].

La Casita de la Salud and many other student-run clinics across the country remain as vital tools for inspiring students to consider a primary care career path. They also serve as excellent points of care for otherwise resource-poor regions. The results of this study show that a quarter of medical students felt that La Casita impacted their choice to enter primary care. This impact should not be under-appreciated. Further, that a tenth of the respondents felt that La Casita specifically changed their career paths to that of primary care is vital to the argument for sustaining and fostering the growth of such clinics. In the face of looming primary care shortages, the influence on this group of students should not be undervalued. As educators continue to examine the needs of the American health care system, the results of this study suggest that student-run clinics may serve an increasingly vital role in addressing the primary care shortage.

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REFERENCES

1. Zimlich R. PCPs, nurses in greatest demand. In: Medical Economics. Available from: <http://www.medicaleconomics.modernmedicine.com/medical-economics/news/user-defined-tags/deloitte/pcps-among-least-satisfied-medical-profession?page=full2012>. [Last accessed on 2014 Aug 20].
2. Grover A. Physician shortages post health care reform. In: Association of American Medical Colleges. Available from: <https://www.aamc.org/download/150714/data>. [Last accessed on 2014 Aug 20].
3. Salsberg E, Grover A. Physician workforce shortages: Implications and issues for academic health centers and policymakers. *Acad Med* 2006;81:782-7.
4. World Health Organization. The World Health Report 2008: Primary Health Care Now More Than Ever. Geneva: World Health Organization; 2008.
5. Physician Workforce Study. In: Massachusetts Medical Society. Available from: http://www.massmed.org/AM/Template.cfm?Section=Research_Reports_and_Studies2&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=31511. [Last accessed on 2014 Aug 20].
6. Bodenheimer T. Primary care – Will it survive? *N Engl J Med* 2006;355:861-4.
7. The impending collapse of primary care medicine and its implications for the state of the Nation's Health Care. In: American College of Physicians. Available from: http://www.acponline.org/advocacy/events/state_of_healthcare/statehc06_1.pdf. [Last accessed on 2014 Aug 20].
8. Patient Protection and Affordable Care Act. Public Law No. 111-148, §2702, 124 Stat. 119. 318-319, 2010.
9. Cullen E, Ranji U, Salganicoff A. Primary Care Shortage: Issue Modules, Background Brief. In: Kaiser Family Foundation. Available from: <http://www.kaiseredu.org/Issue-Modules/Primary-Care-Shortage/Background-Brief.aspx>. [Last accessed on 2014 Aug 20].
10. Physician shortages to worsen without increases in residency training. In: Association of American Medical Colleges. Available from: https://www.aamc.org/download/153160/data/physician_shortages_to_worsen_without_increases_in_residency_tr.pdf. [Last accessed on 2014 Aug 20].
11. Primary care health professional shortage areas. In: The Henry J. Kaiser Family Foundation. Available from: <http://www.statehealthfacts.org/comparemapreport.jsp?rep=112&cat=8&sortc=5&o=a>. [Last accessed on 2014 Aug 15].
12. Center for Workforce Studies: 2011 State Physician Workforce Data Book. In: Association of American Medical Colleges. Available from: <https://www.aamc.org/download/263512/data/statedata2011.pdf>. [Last accessed on 2014 Aug 20].

13. Hawkins DR, Proser MP, Schwartz R. Health reform and healthcare homes: The role of community health centers. *Harvard Health Pol Rev* 2007;8:1-12.
14. Gaskin DJ, Dinwiddie GY, Chan KS, McCleary RR. Residential segregation and the availability of primary care physicians. *Health Serv Res* 2012;47:2353-76.
15. Jacobson PD, Jazowski SA. Physicians, the Affordable Care Act, and primary care: Disruptive change or business as usual? *J Gen Intern Med* 2011;26:934-7.
16. Reinhardt UE. Analyzing cause and effect in the U.S. physician workforce. *Health Aff (Millwood)*. 2002;21:165-6.
17. Bach PB, Kocher R. Why medical school should be free. *The New York Times*. 28 May, 2011.
18. Rabinowitz HK. AM last page. Truths about the rural physician supply. *Acad Med* 2011;86:272.
19. Primary Care Loans. In: Health Resources and Services Administration (HRSA) US Department of Health and Human Service. Available from: <http://www.hrsa.gov/loanscholarships/loans/primarycare.html>. [Last accessed on 2014 Aug 12].
20. Student to Service Program. In: National Health Service Corps US Department of Health and Human Service. Available from: <http://www.nhsc.hrsa.gov/loanrepayment/studentstoserviceprogram/index.html>. [Last accessed on 2014 Aug 12].
21. Campos-Outcalt DE. Specialties chosen by medical students who participated in a student-run, community-based free clinic. *Am J Prev Med* 1985;1:50-1.
22. Guidelines for Primary Medical Care/Dental HPSA Designation. In: Department of Health and Human Services (DHHS), Health Resources and Services Administration, Bureau of Health Professions. Available from: <http://www.bhpr.hrsa.gov/shortage/hpsas/designationcriteria/medicaldentalhpsaguideline.html>. [Last accessed on 2014 Jul 22].
23. Hamso M, Ramsdell A, Balmer D, Boquin C. Medical students as teachers at CoSMO, Columbia University's student-run clinic: A pilot study and literature review. *Med Teach* 2012;34:e189-97.
24. O'Donnell B, Roberts J, Chari R, *et al.* Annual Report 2011. In: La Casita de la Salud Available from: http://www.nymc.edu/student_clinic [Last accessed on 2014 Aug 20].
25. Gu CN, McElroy JA, Corcoran BC. Potential advantage of student-run clinics for diversifying a medical school class. *J Educ Eval Health Prof* 2012;9:8.
26. Simpson SA, Long JA. Medical student-run health clinics: Important contributors to patient care and medical education. *J Gen Intern Med* 2007;22:352-6.
27. Clinic Profiles. In: Society of Student-Run Free Clinics. Available from: <http://www.studentrunfreeclinics.org/>. [Last accessed on 2014 Jun 19].
28. Butala NM, Murk W, Horwitz LI, Graber LK, Bridger L, Ellis P. What is the quality of preventive care provided in a student-run free clinic? *J Health Care Poor Underserved* 2012;23:414-24.
29. Zucker J, Gillen J, Ackrivo J, Schroeder R, Keller S. Hypertension management in a student-run free clinic: Meeting national standards? *Acad Med* 2011;86:239-45.
30. Liberman KM, Meah YS, Chow A, Tornheim J, Rolon O, Thomas DC. Quality of mental health care at a student-run clinic: Care for the uninsured exceeds that of publicly and privately insured populations. *J Community Health* 2011;36:733-40.
31. Ellett JD, Campbell JA, Gonsalves WC. Patient satisfaction in a student-run free medical clinic. *Fam Med* 2010;42:16-8.
32. Smith SD, Johnson ML, Rodriguez N, Moutier C, Beck E. Medical student perceptions of the educational value of a student-run free clinic. *Fam Med* 2012;44:646-9.
33. Schweitzer PJ, Rice TR. The student-run clinic: A new opportunity for psychiatric education. *Acad Psychiatry* 2012;36:233-6.
34. Meah YS, Smith EL, Thomas DC. Student-run health clinic: Novel arena to educate medical students on systems-based practice. *Mt Sinai J Med* 2009;76:344-56.
35. Stoddard HA, Risma JM. Relationship of participation in an optional student-run clinic to medical school grades. *Teach Learn Med* 2011;23:42-5.
36. Tong ST, Phillips RL, Berman R. Is exposure to a student-run clinic associated with future primary care practice? *Fam Med* 2012;44:579-81.
37. Berman R, Powe C, Carnevale J, Chao A, Knudsen J, Nguyen A, *et al.* The crimson care collaborative: A student-faculty initiative to increase medical students' early exposure to primary care. *Acad Med* 2012;87:651-5.
38. Fiore K. Match Day: Specialty slot contest good for primary care? In: *Med Page Today*. Available from: <http://www.medpagetoday.com/PublicHealthPolicy/WorkForce/37906>. [Last accessed on 2014 Aug 20].
39. Petterson SM, Liaw WR, Phillips RL Jr, Rabin DL, Meyers DS, Bazemore AW. Projecting US primary care physician workforce needs: 2010-2025. *Ann Fam Med* 2012;10:503-9.
40. Bland CJ, Meurer LN, Maldonado G. Determinants of primary care specialty choice: A non-statistical meta-analysis of the literature. *Acad Med* 1995;70:620-41.
41. Lawson SR, Hoban JD, Mazmanian PE. Understanding primary care residency choices: A test of selected variables in the Bland-Meurer model. *Acad Med* 2004;79:S36-9.
42. Osborn EHS. Factors influencing students' choice of primary care or other specialties. *Acad Med* 1993;68:572-74.
43. Jeffe DB, Whelan AJ, Andriole DA. Primary care specialty choices of United States medical graduates, 1997-2006. *Acad Med* 2010;85:947-58.
44. Campos-Outcalt D, Senf J. A longitudinal, national study of the effect of implementing a required third-year family practice clerkship or a department of family medicine on the selection of family medicine by medical students. *Acad Med* 1999;74:1016-20.
45. Hauer KE, Durning SJ, Kernan WN, Fagan MJ, Mintz M, O'Sullivan PS, *et al.* Factors associated with medical students' career choices regarding internal medicine. *JAMA* 2008;300:1154-64.
46. Al-Heeti KN, Nassar AK, Decorby K, Winch J, Reid S. The effect of general surgery clerkship rotation on the attitude of medical students towards general surgery as a future career. *J Surg Educ* 2012;69:544-9.
47. Juster F, Levine JK. Recruiting and selecting generalist-oriented students at New York Medical College. *Acad Med* 1999;74:S45-8.
48. Shortage Designation. In: Health Resources and Services Administration, US Department of Health and Human Services. Available from: <http://www.hrsa.gov/shortage>. [Last accessed on 2014 Aug 20].
49. Rebholz CM, Macomber MW, Althoff MD, Garstka M, Pogribny A, Rosencrans A, *et al.* Integrated models of education and service involving community-based health care for underserved populations: Tulane student-run free clinics. *South Med J* 2013;106:217-23.

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Appendix 1: Sample survey questionnaire

Specialty Choice among La Casita Participants

You are invited to participate in a research study that is intended to assess the influence of participation with La Casita de la Salud on student choice in specialty because you were or are a New York Medical College medical student. Even if you did not participate with La Casita de la Salud, we still ask that you complete the survey. Participation in this study is voluntary and will include completing this anonymous survey. You do not have to answer any questions that you do not want to answer, and you may stop taking the survey at any time. The survey should take less than 3 min to complete. Please do not take this survey more than once. For any questions about this study, please contact the Principal Investigator, Dr. William Frishman, at (914) 594-4383.

1. Are you male or female?
Male/Female
2. What year did/will you graduate from NYMC with a MD degree? _____
3. What is your current/future specialty choice?
 - Anesthesiology
 - Dermatology
 - Emergency Medicine
 - Family Medicine
 - General Surgery
 - Internal Medicine
 - Internal Medicine Sub-Specialty
 - Medicine/Pediatrics
 - Neurology
 - OB/GYN
 - Ophthalmology
 - Pediatrics
 - Pediatric Sub-Specialty
 - PM&R
 - Psychiatry
 - Radiology
 - Surgical Specialty
 - Other, Please Specify: _____
4. While in medical school, were you involved with La Casita de la Salud, NYMC's student-run clinic?
Yes/No
5. What was your level of participation with La Casita de la Salud?
 - Clinic Volunteer
 - Executive Board
 - Director N/A
6. How often did you attend the clinic La Casita de la Salud?

1 Time/Year	2-3 Times/Year	4-5 Times/Year	> 5 Times/Year	N/A
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7. How many hours did you devote to La Casita on a monthly basis, including attending clinic?

<2 h/Month	2-4 h/Month	4-8 h/Month	>8 h/Month	N/A
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8. Did you have an idea of which specialty you wanted to pursue before starting medical school?
Yes/No
9. Did you end up deciding on the specialty you originally intended to go into?
Yes/No/N/A
10. Did La Casita influence the change in your decision?
Yes/No/N/A
11. Which single factor most influenced your decision of specialty choice? Interest, Lifestyle, Salary, Debt-load, Clerkships, Extracurricular, Research, Other: _____
12. Did your experience with La Casita influence your specialty choice?
Yes/No/N/A

Thank you for your time and participation in this survey!