Medical trainee perceived value of community service as they progress through training based on curriculum vitae analysis

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Abstract

Background: Participation in community service work is often used as a surrogate for measurement of humanitarianism and altruism in medical school applicants during the selection process. Students who continue to be involved in community service during medical school score higher in empathy scales and perform better academically. Despite this, student involvement in community service has not been well studied, particularly during postgraduate training. **Methods:**First-year medical student (MS1), first year resident (PGY1), and final year resident (FYR) curriculum vitaes (CVs) were collected. CVs were analyzed using NVivo to determine the percentage of each CV committed to demonstrating different activities. These percentages were then analysed for patterns of change as trainees progress through their medical education. **Results:** Fifty-nine trainees (12 MS1, 24 PGY1, and 23 FYR.) submitted CVs for analysis. Community service gradually becomes a less significant portion of a medical trainee's CV. Volunteering in the community goes from 22.5% of a medical student applicant´s resume to 2.9% of a graduating resident´s CV. Volunteering within the school however remains consistent (11.3–13%). Much of the community volunteer activities are replaced by research, which increases from 19.2%– 43.4% of the CV. **Conclusions:** Medical trainees place decreasing value on presenting their community service involvement as they progress through training, while research increasingly dominates their CV. However, service activities within their institutions remain constant.

Keywords: Health Advocacy, Medical Education, Community Service

Date submitted: 26-Feb-2024

Email: Yvonne Ying (yying@cheo.on.ca)

Citation: Ying Y. RMedical trainee perceived value of community service as they progress through training based on curriculum vitae analysis. Educ Health 2024;37:110-117.

Online access: www.educationforhealthjournal.org
DOI: 10.62694/efh.2024.35

Published by The Network: Towards Unity for Health

Introduction

Professionalism, humanitarianism, and compassion are all characteristics considered desirable in physicians. Community service involvement is sometimes regarded as a substitute measurement for these characteristics. [1,2] Community service activities are activities where the individual is helping others by providing support or assistance. [2] While in training, community service activities can take place within formal education, such as service-based rotations, or informal medical education curricula, such as voluntary group activities organized through their schools.[3-5] Students can also choose to engage in activities that do not need any "structured preparation or reflection but simply provides assistance to "others in need" outside of their medical training. [6] Upon graduation, physicians can provide community service and volunteering work related to their field of expertise; however, it is generally only considered community service if delivered outside of a clinician´s normal practice environment.

This value placed on community service as a surrogate for humanitarianism and compassion may be a reasonable approach, as students involved in community service before and during medical school have been shown to have greater empathy and sense of humanitarianism.[7,8] As such, medical schools often seek information on community service experience within their application process, and it is considered a substitute measure for the aforementioned desirable traits in medical school applications.[1,2]

Medical school selection criteria often value community

service activities, and some students continue with community service during their medical school training.[9] There is debate on whether voluntary versus mandatory community service activities are equally beneficial. Some believe that community service can be a learned value and that mandatory activities will still build awareness of community problems. This mandatory involvement would then lead to the development and practice of humanitarianism.[1,8] Notably, medical students believe that continued participation in community service activities serves as a reminder of why they chose to enter medicine.[10] Medical students can benefit emotionally from their service experiences with feelings of fulfillment from their interactions with patients.[11]

In addition to self-described benefits of increased emotional and professional fulfillment, a longitudinal study throughout undergraduate medical training showed that students engaging in community service scored higher on objective empathy tests compared with students who reported no community service activities.[7] Students also describe greater awareness of community professionals and resources, improvement in interpersonal communication and patient education skills, and improved sense of social responsibility. [12] Medical students engaged in community service-related activities have also been shown to perform better academically during medical school and their residency.[13,14]

Despite these proven benefits of community service involvement, there is limited research on community service trends throughout medical training, particularly through postgraduate medical education. A study by Loh *et al* showed that having a prior commitment to community service experience before medical school reinforced medical students' decisions to restart activities during their medical school training. [10] More than two years of community service was also significantly associated with greater participation during medical school. [9] Students who had engaged in community service during medical school reported that they were also more likely to consider their service experiences when choosing a specialty or residency. [6] To quantify participation in community service, the University of South Carolina has an office that promotes and records community service, which showed 54% of students contributing an average of 30 hours each in 2008—a significant increase over the previous decade. [6] However, this is likely a decrease from the time before students begin their medical studies. Students interviewed in the study by Elam *et al* were all considered as those with the highest commitment to community service, and yet 74% stated there was a decrease since matriculation into medical school.[1]
Following completion of medical school, there is even less literature measuring participation in community service during postgraduate medical training. Community service and outreach rotations are incorporated as part of some specialty training programs, particularly in Pediatrics,[4] and topics such as health advocacy are sometimes incorporated within postgraduate education curricula.[15] However, didactic teaching and clinical rotations are different from (mandatory or voluntary) community service activities. Surgical trainees at the University of Ottawa participate in a mandatory community service activity, and the majority reflect that they learned from their experience, and that it would alter their patient management in the future.[16] However, there is no literature that quantifies the participation and value placed on community service in postgraduate medical training.

The aim of our study is to try and quantify the prioritization of community service by medical trainees from pre-medical activities, through medical school and into residency. Our hypothesis is that despite its value, there is decreasing emphasis on community service activity for trainees as they progress through undergraduate and then graduate medical education.

Methods
First year medical students (MS1), first year postgraduate residents (PGY1) and final year postgraduate residents (FYR) from the University of Ottawa were recruited to participate in this study.

MS1 student were requested to submit the CV used to apply for medical school, that were used to represent pre-medical student activities. PGY1 residents were requested to submit the CV used during the residency application, and were representative of activities during medical school. FYR were asked to submit the CV they are currently using to submit for fellowship applications, or job positions. These CVs represent the CVs of residents at the end of their specialty training.

First and final year residents were recruited from a range of specialty training programs (Emergency Medicine, Internal Medicine, Surgery (multiple subspecialties), Psychiatry, and Pediatrics). These programs were chosen because they are the largest specialty training programs to allow for anonymity. Specialty training in Canada is 4–6 years in duration, so FYRs could be in their fourth, fifth or sixth year of postgraduate training.

All trainees were recruited via email sent through the Undergraduate Medical Education Office (for medical students), or through the residency training program´s administrators (for residents). Participants were offered a gift certificate as appreciation for participation in the study. Those who responded to the email call for participation were sent an electronic survey and asked to send in a copy of their most recent curriculum vitae (CV) used to apply for medical school, residency, or fellowship/jobs. The survey pertained to their thoughts on community service and was not analyzed in this paper.

CVs were anonymized and analyzed. Each line within a CV was coded into categories based on type of activity; coding was not limited to only one category and cross-coding did occur. Initial coding of sample CVs was done on paper by two of the authors in an iterative process to ensure good agreement on the groupings (YY, LZ). Once a coding scheme was agreed upon, two authors (YY, NN) coded a number of CVs using NVivo 11 Software (QRS International Pty Ltd) to again ensure good concordance, with greater than 80% agreement with coding. All CVs were then coded by a single author (NN).

Categories for coding can be found in Table 1. Data was initially coded in smaller categories, with specific inclusion and exclusion criteria based on the iterative discussions. These categories were then grouped in larger Merged Categories during the analysis. Following coding in NVivo, data consisting of a number of words coded into each coding category was exported. Number of words was used, as the goal was to determine how much of the CV volume was committed to each topic. Data was normalized for each CV to determine the percentage of each CV devoted to each Coding Category. This data was imported into SPSS 25 (IBM Corp) for statistical analysis.

Activity levels in different categories between levels of training were compared using a 1-way ANOVA.

Results

Fifty-nine trainees (12 MS1, 24 PGY1, and 23 FYR.) submitted CVs for analysis. Average percentage of each CV committed to each category can be found in Table 2. Total percentage does not equal 100% as sections such as section headers and personal information, were not coded. A few items were also cross-coded into more than one category. 1049 coding references were coded into only one category, while 79 were coded into more than one category. Most commonly overlapping coding was between Employment and Research Project, where the job description listed under employment had a description of the research project.[18] Research Project and Research Publication[9] or Presentation[8] had the second and third most common cross-coding, when the description of a research project under a research experience heading also included listing of a publication or conference presentation.

Average score for each category with associated p-values can be found in Table 2. Comparing CVs between the different levels of training showed a significant increase in research at each level, particularly in research publications and presentations. This category increased the most, and becomes dominant in the CV of trainees at the end of residency, encompassing 43% of FYR CVs.

There is also a gradual increase in workplace presentations, such as giving rounds, and a significant component of the PGY1 CVs were committed to their electives during medical school. As expected, this increase goes away by the end of residency.

The two categories that significantly decrease in PGY1 and FYR CVs are awards and volunteering outside the school ($p=0.000$). There is a decrease in volunteering occurring mostly during medical school, and awards decreasing during residency. Volunteering in the school remained fairly consistent throughout training.

Discussion

As trainees move through their education, from applying for medical school to applying for jobs and fellowships, the landscape of their CV also changes. Many changes are not unexpected. Although overall work and education does not significantly change, there is a specific shift from jobs participants held before medical school to electives during medical school. This is expected as completing electives in different specialties is often used to demonstrate interest in the specialties students are applying to for residency. These electives virtually disappear for job and fellowship applications, likely because residency programs do not usually have significant elective opportunities. Instead of electives, presentations at rounds appear to be a way for residents to demonstrate interest or expertise within their specialty. Overall, milestones in education (degrees and certifications) also gradually increase to make up the difference. Similarly, awards tend to decrease with time as residents are not awarded scholarships and awards based on grades, which is more prevalent in pre-medical undergraduate training.

Research presentations at conferences, and paper publications consistently increase throughout training. Research work is already quite common before students apply for medical school, taking up almost 20% of their CV. But this becomes dominant by the end of training, taking up almost 45% of their CVs at that time. Research is strongly emphasized in many training programs. Scholarship is considered an important part of residency training by both the United States (Accreditation Council for Graduate Medical Education) and Canadian (Royal College of Physicians and Surgeons of Canada) postgraduate training guidelines, and inadequate scholarship is frequently cited as a concern during accreditation. [17,18] Just as medical students perform research in areas of specialisation to demonstrate interest, residents continue to do so, perhaps within subspecialty areas for fellowship applications. Completing research projects and presentations at conferences may also provide opportunities for residents to attend conferences, and act as an additional motivator. Research presentations, or papers published, also accumulate and do not become outdated on a CV as quickly. Publications tend to remain on a researcher´s full CV and are cumulative throughout his/her career, gradually taking more and more space of the CV. Other things such as jobs or electives tend to be removed as newer experiences are presented. Research was the area

that was the most cross-coded, and this could account for some of the increases, but is unlikely to account for a majority of the increase, given the relatively small number of cross-coded items.

Volunteering in the community is the category that shows the greatest decrease. Pre-med students appear to spend 22.5% of their CV sharing their volunteer activities, but graduating residents spend less than 2.9% of this activity on their CV. Time pressures during medical school and residency is often cited as the reason behind the inability to participate in community service activities, and may account for the decrease. [1] However, time availability may not be the only reason for the decrease, as volunteering in the school does not change significantly, remaining between 11–13%.

This change in community volunteering, but not in volunteering within the institution, may be because of a fixed time commitment. Students in their clinical clerkship or residency may find it difficult to commit to fixed times to volunteer due to fluctuating clinical schedules. However, when residents volunteer for teaching, or for committees in the training program or hospital where they work, their supervisors are likely aware of these activities, and may even be delegating trainees to attend these activities, making it easier to participate. The visibility of these activities to their supervisors can also encourage trainees to participate, or residents may perceive this as being valued by their supervisors. Although not quantified, activities such as teaching medical students tended to replace school clubs and committees as students progressed through training, maintaining the number of institutional volunteering items listed on their CVs.

The high prominence of volunteering before medical school is likely also because volunteering is something that is expected of medical school applicants, or that medical school applicants believe is expected of them.[1] Listing volunteer activities is specifically requested in most medical school applications. [2] However, this volunteering may not be valued the same way in residency applications. It is unclear how many residency programs specifically consider participation in community service when weighing residency selection. A study by Makedisi *et al* surveying selection criteria for general surgery residents in Canadian and US training programs, did not include community service in the questions as part of the survey. [19] This is an indicator that the authors did not think this would be an important selection criterion. Research and publication experience and expectations, however, were in 5 of the 36 questions, indicating the researchers thought this would be an important factor.

What trainees write in their CV may also not entirely represent what they actually do, or how much time they spend on activities. A single line item of a community volunteer activity may be a weekly event and require significant time commitment. However, we feel that it represents what they want to show prospective program directors or employers, and how much they are emphasizing it. Once a trainee has entered medical school, and even more so after entering specialty training, volunteering in the community no longer appears to be something they think is valued by their supervisors.

It is unclear how residency and fellowship program directors actually perceive community service, but we believe the CV reflects the impression they have given their students of what is important. It may be that postgraduate medical training does not value community service as so important, and that research is a more valued time investment. However, if this is not the case, then some thought should be given to how our training and selection processes tacitly encourage, or discourage, these activities amongst our trainees, and the messages being sent on what activities are valued.

Future research should involve gathering perceptions of value of these activities, directly from trainees, and what gives them these impressions of value.

Limitations

This is a small single institution study, and resident activities may be limited by the opportunities available in our centre. This study was also limited to specific specialties. Other training programs, particularly family medicine, were specifically excluded. Family medicine may have a greater focus on primary care and less research, and may encourage more community service among its applicants. However, Family Medicine training is a two-year residency in Canada, and final year Family Medicine residents would be at the beginning of their second year, and would have only completed one year of residency. The potential for change in CVs would be much more limited due to the short time frame, and could not be directly comparable to specialty residents after 3–5 years of residency

Coding of the activities may also change its distribution, and an alternative coding system could be developed that would not allow for cross-coding.

Conclusions

Medical students and physicians are bright, competitive individuals who understand that they can tailor their activities and CVs to demonstrate what they believe their supervisors and employers ultimately value. Research in a specialty is often used in medicine as a demonstration of interest and expertise in that field. Studies in the literature demonstrate that community service experience is an important consideration when selecting medical students, but this does not seem to be discussed as much in selection for residency training, fellowships, and jobs. If placement of activities on the CV is a reflection of what trainees feel is valued by those judging

their applications, then research, involvement in activities within the organization, and presentations at rounds would be the most valued.

The value of community service involvement decreases precipitously from a trainee's CV through the ongoing stages of medical training.

Figure 1: Distribution of CV allocated to each of the merged headings. MS1 – First year medical student; PGY1 – First year residents; FYR – Final year residents

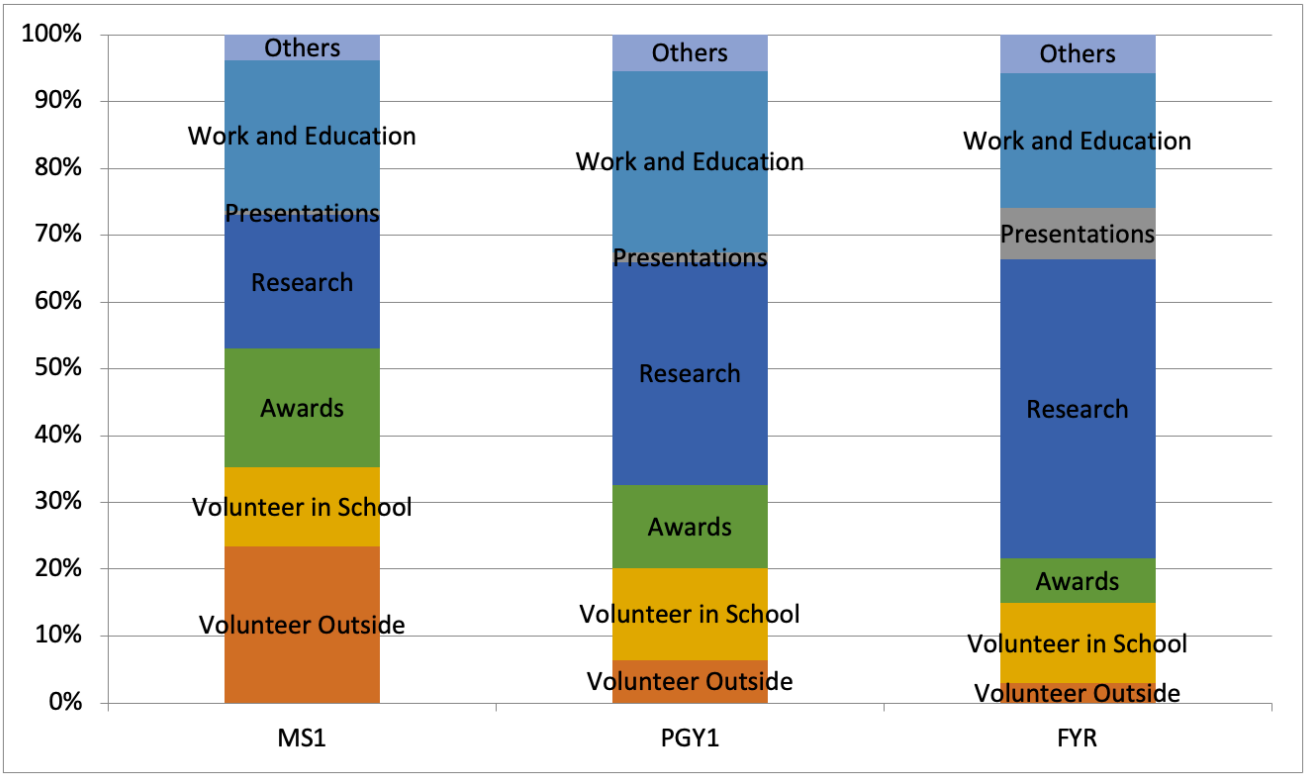

Table 1: CV item Categories

Coding Category	Description, Inclusion criteria, and examples	Specific exclusions	Merged Category
Awards & honours			Awards
Education	Degrees Certifications Descriptions of training		Work and Education
Clinical electives	Clinical rotations (mandatory, selectives or electives) Clinical observerships		
Employment	Jobs including job descriptions Research jobs included if listed under employment (can be cross coded under research)		
Work Presentations	Presentations at work such as giving lectures at rounds	Research presentations at conferences Resident teaching sessions for medical students and junior residents	Work Presentations
Extra curricular – inside school	School Clubs and Committees Volunteer activities that are part of a university partnership (e.g., School chapter of a national charity) Yearbook Residents teaching sessions for medical students or junior residents Peer mentoring Volunteering on hospital committees where the trainee works (e.g., resident representative)	Volunteer research activities Volunteering in hospital if volunteering is service oriented and not related to their position as a trainee	Extra-curricular in School
Extra-curricular – outside school (volunteering)	Community volunteering such as food banks, sports activities, community mentoring. Volunteering in hospitals/ hospitals/ long term care institutions if not part of the curriculum, and not related to their position as a trainee in the hospital	Volunteering on hospital committees where a trainee works (e.g., resident representative) Volunteer research activities	Extra-curricular outside School
Hobbies & interests	Languages spoken Athletic interests Talents and skills		Others
Other publications (art, handbook)	Non-medical books or articles Artwork		
Professional societies	Memberships		
Research publications	Scientific research publications		Research
Research projects	Paid or volunteer research jobs where the description is primarily about the clinical/medical research project Research project experience descriptions		
Research presentations	Clinical and medical presentations		

Table 2: Percentage of CV committed to each category

Merged Category	First year medical students	PGY1 residents	FY residents	p-values
Awards & honours	17.0	11.9	6.5	**0.000 ↓**
Work and Education	21.6	25.9	19.6	0.362
Education	6.8	8.6	11.1	0.113
Clinical electives	0.0	11.6	4.2	**0.000 ↑↓**
Employment	14.8	5.7	4.2	**0.006 ↓**
Presentations	0.61	1.3	7.5	**0.000 ↑**
Extra curriculars – inside school	11.3	13.0	11.6	0.817
Extra-curriculars – outside school	22.5	6.1	2.9	**0.000 ↓**
Others	3.7	5.1	5.5	0.569
Hobbies & interests	2.4	3.4	3.3	0.726
Other publications (art, handbook)	1.3	0.8	0.3	0.529
Professional societies	0.04	0.9	1.9	0.019
Research Total	19.2	31.9	43.4	**0.000 ↑**
Research publications	2.6	7.3	15.6	**0.001 ↑**
Research projects	13.2	14.7	10.3	0.349
Research presentations	3.4	9.8	17.45	**0.004 ↑**

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