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ORIGINAL RESEARCH

Short-term Experiences in Global Health: What is the Cost of Cultural Competence?

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Abstract

Students in a wide variety of health professions are increasingly interested in volunteering on a short-term experience in global health (STEGH). The literature suggests that STEGHs pose a variety of potential risks and benefits, and may carry a significant cost to plan and provide. One potential mitigating factor for any risks and costs is that student participation on a STEGH may enhance their cultural competence. Since monies spent on STEGHs are fungible, and there may be other opportunities to improve students' cultural competence, the objectives of this study were to determine if participation on a STEGH increased students' cultural competence and if so, what the cost for any such increase was. In this study, 20 students who participated on a 1-week STEGH to the Dominican Republic completed the Inventory for Assessing the Process of Cultural Competence Among Health Care Professionals – Student Version (IAPCC-SV) before and after the STEGH. The costs for all students and 7 supervising health professionals to volunteer for the STEGH were calculated, and the size of any increase in cultural competence was determined. The cost was divided by the change in cultural competence to ascertain the cost of the change. Students showed a measureable increase on the IAPCC-SV overall and on the subscales of knowledge and skill. The cost of a 1% overall increase in students' cultural competence ranged from $287 to $401. These results may allow schools offering STEGHs to determine if their offerings are cost-effective or not.

Keywords Medical missions · Education · Medical · Undergraduate · Cost and cost analysis · Cultural competence

Background

Although estimates vary, between 800,000 and 1 million Americans annually volunteer to provide some type of community, medical, religious, or social service outside of the USA [1, 2]. Their volunteering is usually of short-term duration with over 60% lasting 4 weeks or less. Sponsoring agencies are often religious (44%) or health-related (14%) [1, 2].

One common form of international volunteering is assisting on a short-term experience in global health (STEGH, also commonly referred to as a medical mission trip or medical service trip). Sykes defined such experiences as trips wherein medically trained volunteers from high-income countries travel to low or middle-income countries to provide health services for periods lasting from 1 day to 8 weeks [3]. During STEGHs, volunteers provide a variety of primary healthcare, dental, surgical, or public health services to residents in underserved communities. Volunteers may also provide health training to local physicians, nurses, and other providers. By one estimate, 32% of American physicians have volunteered to provide pro-bono medical services in a developing country and 77% of them had repeated the experience [4].

Similar to licensed providers, trainees in medicine, pharmacy, dentistry, podiatry, and nursing are also keen to volunteer for a STEGH. Two-thirds of medical students expect to do

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a STEGH as part of their studies [5]. According to the American Association of Medical Colleges, 35% of students who matriculated to a medical school in 2018 had undertaken some form of international volunteering work and 24% of 2019 medical school graduates had participated in a volunteer or elective global health experience [6, 7]. Prescott and colleagues found that 65–80% of colleges of pharmacy provided some kind of formal or informal student experience in global health [8]. In one survey of American dental students, 85% stated it is important for dental schools to provide students with an opportunity to participate in international exchange missions and 78% expressed a desire to participate in such a mission [9]. Bentley and colleagues found that an international immersion experience enhanced a multidisciplinary group of students' interprofessional education [10]. Aseno and colleagues identified three themes from a qualitative study of eight nursing students in Zimbabwe [11]. They found that student learning was facilitated by their expectations, by their engagement, and by their critical reflections. Students in podiatric medicine may also volunteer for a STEGH. In a study of eight podiatric medicine students who had participated on a STEGH, Elliott and colleagues found that 75% of respondents strongly agreed that their experience was positive and increased their personal awareness of multicultural and diversity issues [12].

Student zeal to participate on STEGHs often stems from a blend of wishing to give back as well as a desire to enhance their clinical skills [13]. Although such enthusiasm is generally commendable, recent literature notes a number of concerns surrounding possible risks and harms stemming from sending students abroad to provide health care [14]. These concerns include the risks of inadequate follow-up care, negative economic externalities to local business and health providers, and exploiting host country health systems more for learning purposes than to provide health care. Other authors have commented on the significant costs related to planning and providing a STEGH [15–17]. Published estimates of the cost of a single STEGH range from $12,600 to $84,000 [2, 18]. Nationally, the total cost of all STEGHs may be as high as $3.7 billion annually [17].

Even though some of the literature expresses concern about the risks and harms of STEGHs, it is necessary to balance these shortcomings against possible benefits from participating. Caldron and colleagues argue that STEGHs serve as a form of unsanctioned, grassroots, and highly direct expression of transnational aid. They further argue that the face-to-face nature provides intangible "feel good" rewards to volunteers that may be "layers deeper, more habit-forming, and compelling than other forms of philanthropy" [17]. Other literature offers that participation in a STEGH is beneficial to participants since working in the Global South improves volunteers' understanding of health and healthcare in a high-needs, low resource environment, and is necessary to prepare the next generation of healthcare professionals who will work in a globalized world [5, 19–23].

From the literature published to date, one may reasonably conclude that STEGHs are expensive, but that there may be a commensurate enhancement of volunteers' cultural competence. This intersection of costs versus cultural competence merits further study. One may reasonably ask, what is the size of any increase in cultural competence and what does it cost to achieve it?

Objectives

The objectives of this study were to determine if participation on a STEGH increased the cultural competence of health professions student volunteers and if so, what the cost was for any increase.

Methods

Subject Selection

Study subjects were first or second professional year students in osteopathic medicine, podiatric medicine, physician assistant studies or pharmacy at two universities in the American Midwest and licensed health professionals who accompanied the students for teaching and clinical supervision purposes. All subjects volunteered for a STEGH to the Dominican Republic during Spring Break of 2017. Student volunteers underwent a selection process consisting of a written application and personal interview. All subjects were over the age of 18, read, spoke, and wrote English, and provided informed consent prior to participation (Drake University IRB Submission Number 2016-17027).

Description of STEGH

The STEGH was a 1-week experience to provide primary health care services in Monte Cristi, a city on the northwest coast, near the Haitian border. Patients were low-income workers on banana plantations and their families. Dominican patients spoke Spanish while Haitian patients spoke mainly Creole. Local interpreters were provided for those students and providers who spoke only English. The sponsoring universities developed the STEGH in partnership with a non-governmental organization (NGO) based in the American Midwest that provides health care services in the area and coordinates between the local health care system and visiting STEGH groups. Under the supervision of licensed American providers, students provided a variety of healthcare services including physical exams, diagnosis of illness, medication prescribing, patient education, medication dispensing,

referrals to specialist or follow-up care, and basic laboratory services.

Data Collection

One month prior to and 1 month after completion of their STEGH, student volunteers were asked to complete an online Qualtrics® survey.

The pre-departure survey included questions related to basic demographics, prior participation on a STEGH, previous cultural immersion experience (e.g., Peace Corps, study abroad), formal coursework in cultural competence in either their undergraduate or health professions training, and their estimate of costs incurred prior to the trip (e.g., airfare, passports).

The post-return survey included the same demographic and prior experience/education questions as well as an estimate of costs students incurred during the trip (e.g., visa fees, meals while in transit).

Volunteer providers' out of pocket costs were assumed to be the same as those paid by students with the exceptions of fees paid to the third-party NGO organizer, experiential learning fees paid to the universities, and airfare. Providers' opportunity costs represented the income foregone by providers for their time away from their practice sites. Opportunity costs were estimated from the 2016 Bureau of Labor Statistics. The mean annual wage for each provider was divided by 52 to reflect the cost of 1 week's foregone wages [24]. A detailed description of the costs of the STEGH is available elsewhere [25].

Both the pre-departure and post-return surveys also asked students to complete the Inventory for Assessing the Process of Cultural Competence Among Health Care Professionals – Student Version (IAPCC-SV) [26]. This is a 20-question, psychometrically validated, and copyrighted instrument specifically designed to measure the level of cultural competence in undergraduate health professions students across five cultural constructs:

- Awareness: The process of examining one's own biases towards other cultures;
- Knowledge: The process of seeking and obtaining a sound educational base about culturally diverse groups;
- Skills: The ability to collect culturally relevant information;
- Encounters: The process that encourages engaging in face to face cultural interaction;
- Desire: The motivation to engage in the process of becoming culturally aware.

The IAPCC-SV has been used in previous studies and is available for use only with the permission of the author [26–28].

Results

Twenty students volunteered for the STEGH and all completed both the pre-departure and post-return surveys. Seven providers (2 family practice physicians, 2 physician assistants, 1 obstetrician/gynecologist, 1 registered nurse, 1 registered pharmacist) accompanied the students. Student demographics are shown in Table 1.

The total out of pocket cost for 20 students was $35,284. For 7 providers, the total out of pocket cost was $14,459. Opportunity cost for 7 providers (i.e., foregone income) was $19,869. When all out of pocket plus opportunity costs are totaled for all volunteers, the final cost of the STEGH was $69,612. If not considering providers' opportunity costs, the cost of the STEGH was $49,743.

Student volunteers' scores on the IAPCC-SV pre and post their STEGH are shown in Table 2.

Previous research showed the minimal detectable change with 95% confidence (MDC95) for each sub-scale construct and overall in the IAPCC-SV to be 1.34 for awareness; 2.02 for knowledge; 1.52 for skill; 1.61 for encounters; 1.17 for desire; 4.10 for overall score. The IAPCC-SV is scored from 20 to 80 where a total score of 20–40 represents culturally incompetent; 41–59 represents culturally aware; 60–74 represents culturally competent; 75–80 represents culturally proficient [28].

As shown in Tables 2 and 3, although students' overall baseline score suggests they were culturally competent, their cultural competence increased by 5.50 points (8.68%) overall and by 3.15 points (23.6%) and 1.7 points (20.86%) for the subscales of knowledge and skill, respectively. Table 3 indicates the cost for a 1% increase in overall cultural competence and the subscales of knowledge and skill including and excluding opportunity cost.

Discussion

In a recent review of the importance of culture in health care, Napier and colleagues state, "…the systematic neglect of culture in health and health care is the single biggest barrier to the advancement of the highest standard of health worldwide" [29]. Practitioners may be confronted with local models of wellbeing that are different from what they previously assumed to be universal. Napier and colleagues further argue that competence requires attention to both the patient's and the provider's explanatory models of illness and wellbeing and the acceptance that meanings can differ. Providers must be both culturally and clinically competent. Unfortunately, Napier and colleagues express concern that much health professions training may reduce patients to broad, stereotypical categories. They are concerned that such stereotypes are often "synonymous with ethnicity, nationality, and language."

Table 1 Student volunteer demographics

Demographics	Number (%)
Female	17 (85)
Male	3 (15)
Age (Mean +/−SD)	25.2 (3.5)
Number of previous short-term medical trips (mean, range)	0.88 (0–> 3)
Previous cultural immersion experience (Peace Corps, Study Abroad etc.)	15 (75)
Osteopathic medicine student	13 (65)
Podiatric medicine student	4 (20)
Physician assistant student	1 (5)
Pharmacy student	2 (10)
First professional year student	10 (50)
Second professional year student	10 (50)

A unique feature of STEGHs is that they take students out of the classroom or clinic in the Global North and place them in a setting where they are likely to be in the racial, cultural, social, and linguistic minority. They can therefore experience a diversity of opinions about health and wellbeing across a wide range of patients, which may mitigate against some of the concerns that cultural competence training may only serve to enhance stereotypes. This study and others provide evidence that participation on GHGH can enhance students' cultural competence [5, 19–23].

Other authors writing about STEGHs express concern about their costs and call for evaluations of STEGHs that include discussions of cost [15, 16]. Thus, an evaluation of the cost for any purported increase in cultural competence resulting from volunteering on a STEGH should be a topic of interest. Monies are fungible and costs incurred by a university that are devoted to improving students' cultural competence by means of a STEGH could be spent elsewhere, possibly with the same effect. As such, an economic evaluation of the effect of a STEGH on cultural competence is necessary. This study appears to be the first to attempt to attach a cost to increasing students' cultural competence with a STEGH.

In this study, two key concepts emerge: (1) volunteering on a STEGH increased cultural competence in health professions students overall and on two subscales; (2) the STEGH was expensive, thereby making any participants' increase in cultural competence costly.

As noted above, this study appears to be the first attempt to determine the cost of improving cultural competence in health professions students. The cost for a 1% increase in overall student cultural competence was $287–$401, while the cost for a 1% increase on the subscales of knowledge and skill was $105–$147 and $119–$167, respectively. A study such as this cannot determine whether or not STEGHs are a cost-effective method to increase students' cultural competence. To determine cost-effectiveness, these results could be compared with other activities that increase students' cultural competence to assist in making decisions on where to commit resources. It is worth noting that the cost for a 1% change is less than the tuition cost of one class credit hour at either university that participated in the study. The improvement in cultural competence was also noteworthy in that, on average, students had already participated in 0.88 mission trips each, 75% of students had a previous cultural immersion experience (e.g., Peace Corps, study abroad), and the improvement on the skill subscale occurred in a setting where patients spoke only

Table 2 Overall cultural competence scores results

Cultural competence $N = 20$	Mean pre-test score	Mean post-test score	Difference	Published MDC95*	Measurable change detected?
Awareness	10.80	11.15	0.35	1.34	No
Knowledge	13.35	16.50	3.15	2.02	Yes
Skill	8.15	9.85	1.7	1.52	Yes
Encounters	16.65	16.35	-0.3	1.61	No
Desire	14.45	15.05	0.6	1.17	No
Overall	63.40	68.90	5.50	4.10	Yes

*Minimum detectable change with 95% confidence

Table 3 Cost for 1% increase in cultural competence

Scale	% Increase on the scale	Total cost of the STEGH including opportunity costs	Cost per 1% increase on the scale including opportunity costs	Cost per 1% increase on the scale for 1 student including opportunity costs	Total Cost of the STEGH excluding opportunity costs	Cost per 1% increase on the scale excluding opportunity costs	Cost per 1% increase on the scale for 1 student excluding opportunity costs
Overall	8.68	$69,612	$8,020	$401	$49,743	$5,731	$287
Knowledge	23.6	$69,612	$2,950	$147	$49,743	$2,108	$105
Skill	20.86	$69,612	$3,337	$167	$49,743	$2,385	$119

Spanish or Creole. One could reasonably speculate that a similar STEGH in a cohort of students without previous experience on mission trips or other cultural immersion experiences may show a greater increase in cultural competence, in which case the cost to improve cultural competence would be less than seen in the current study.

Limitations

Several limitations to this study should be noted. Overall, the sample size is small. That being said, a team size of 27 for a Dominican Republic STEGH would not be an unusual size for a typical trip. Student costs were estimated by self-reports. University policies to cover faculty supervision costs may differ, so the costs assigned to faculty in this study remain estimates. The specific breakdown of costs borne by universities or individual faculty members could not be calculated. STEGHs to other locations may have different travel and lodging costs, and those without students would also be expected to have different results. Costs to the partnering NGO for ground staff, back-office operations, clinic space. etc., were not considered.

Although students demonstrated an 8.68% increase in cultural competence after participating on the STEGH, it must be noted that their mean baseline scores were already in the culturally competent range for the IAPCC-SV and remained in this category. It is not clear if this increase is meaningful with respect to improving students' abilities to provide care to diverse groups of patients. These results may not be applicable to students who have not participated in any previous activities intended to increase cultural competence. Although the present study shows a correlation between volunteering on the STEGH and increased cultural competence, it is possible that an unidentified confounder may also contribute to the increase in cultural competence. Finally, the persistence of the increase in cultural competence is not clear. Follow-up studies repeating the IAPCC-SV survey at a later time would be necessary.

It should be noted there may be several positive externalities as a result of service on an MST. Volunteers may find they have better career or residency opportunities. Experience in other countries may result in a better sense of global community among both volunteers and host communities. Although these are potential benefits of MSTs, they are difficult to measure and the lag time for them to occur is unclear.

Conclusions

First and second professional year health professions students showed an increase of 8.68% in overall cultural competence and increases of more than 20% on 2 subscales after volunteering on a STEGH. The cost for a 1% increase in cultural competence ranged from $105–$401 depending on the scale. This cost is fairly consistent with the cost of one credit hour of didactic education. The increases in cultural competence are noteworthy since they occurred in a cohort of students who already had experience in the Global South.

Authors' Contributions The study was conceptualized by JR. Study design was by MA and MB with assistance from JR and JG. Data collection was performed by JR and JG. Data analysis was by MA, MB, and JR. The manuscript was written by JR with assistance from MB, MA, and JG. All authors have reviewed and approved the manuscript.

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Data Availability All data is available from the Figshare Data Repository at https://doi.org/10.6084/m9.figshare.6938456

Compliance with Ethical Standard

Competing Interests The authors declare that they have no conflict of interest.

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (Drake University Institutional Review Board IRB Submission Number 2016-17027) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Consent for Publication Not applicable. No individual's data in any form has been included in this study.

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