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Feasibility of an undergraduate academic fellowship in global health system development

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Abstract

Background Despite increasing student interest in global health, undergraduate opportunities remain limited and often lack practical, multidisciplinary experiences. To address professional gaps for future healthcare professionals and global health workers, it is crucial to incorporate resource management, business practices, and leadership into undergraduate volunteer service-learning programs.

Methods Lay First Responders (LFR) International's Fellowship Program in Emergency Medical Care and Innovation (ECMI) trains undergraduates to develop community-based emergency medical services in low- and middle-income countries, focusing on global capacity building, service leadership, and cultural competency. The year-long program guides fellows through a three-stage process of skill-development, design, and project implementation. The curriculum encompasses four main educational components: (1) professional development and networking, (2) global health education, (3) scientific research, and (4) internationally engaged collaboration. Program assessment was conducted through thematic analysis of open-ended survey responses from fellows at the beginning and end of their fellowship year.

Results Since 2019, 22 fellows have completed the program, acquiring skills in research, teaching, and writing publications and grants. Surveys of the 2022 and 2023 cohorts revealed that all nine participants accomplished their intended goals during the fellowship, with over half expressing a desire to continue working with LFR International. The program's success is further evidenced by the fellows contributing to 17 academic outputs, securing $31,000 in funding, and their placement in advanced degree programs.

Conclusions The EMCI Fellowship has been well received and effective in addressing gaps in global health education. This model could be replicated by comparable global health non-governmental organizations to implement programs while immersing undergraduate students in hands-on international collaboration and operational management experiences. Future development should expand fellowship concentrations to additional global health fields and assess the long-term impacts of the program.

Keywords Global health, Undergraduate medical education, Prehospital emergency care, Nonprofit organizations

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Background

In recent decades, there has been a notable surge in United States-based student interest in pursuing global health as an academic field across all educational levels. While many medical schools, graduate schools, and residency programs provide optional, short-term global health tracks or formal degree programs, opportunities for undergraduate students remain limited [1, 2]. As of 2019, global health-related majors and minors were only offered at 25% and 33% of Northern American institutions, respectively, primarily focusing on passive education, training, and mentorship. Engaged research and international travel opportunities are offered by an even smaller number of programs. Of these programs, fewer than 10% of activities focus on locally led service delivery or external capacity building, which are particularly important in building collaborative and engaged global health partnerships. The majority of global health programs do not incorporate multidisciplinary experiences, such as data management, program leadership, and monitoring and evaluation skills, which have been shown to make pre-health students more competitive in the global health job market [3]. While most of these global health opportunities originate from academic institutions, these programs face challenges in sustaining research funding, identifying faculty with sufficient time and experience for mentorship, and maintaining overseas partnerships [3].

Furthermore, prior studies have demonstrated that medical students exhibit deficiencies in crucial skills like resource management, business practices, and leadership [4], and they are only first exposed to the strategic, operational, and interpersonal realities of healthcare in residency programs [5]. Addressing these cognitive and noncognitive professional gaps early in undergraduate education, particularly through practical experiences such as volunteer service work, is essential [6]. Recognizing the importance of cross-sectoral perspectives in global health education, integrating volunteer service-learning opportunities could provide students with experienced global health mentors and multidisciplinary training early in their careers [7]. However, the sustainability of this model lies in the nonprofit's existing funding mechanisms, mentorship expertise, and robust international partnerships.

Lay First Responders (LFR) International, a 501(c)(3) nonprofit, has developed a Fellowship Program in Emergency Medical Care and Innovation (EMCI) to address these gaps by training undergraduate students to facilitate the development of community-based emergency medical service programs in low- and middle-income countries (LMICs). The fellowship curriculum emphasizes global capacity building, international service leadership, medical research, and cultural competency considerations, equipping students for careers in international healthcare work.

Methods

Fellowship program description

Established in 2019, the EMCI Fellowship Program offers participants opportunities to assist in the development and implementation of prehospital care initiatives, including the global expansion of lay first responder programs, participation in global health research, and invaluable exposure to international nonprofit work. Since its origin, the fellowship has expanded to provide tracks in Prehospital Care Innovation, Health Policy and Evaluation, and Psychosocial Programming. Each year, a three-round application process consisting of a written application, a graded case study, and an interview, identifies promising individuals. Successful applicants often have interests and previous experiences in research, public health, emergency medical systems, and international outreach. Final application portfolios are reviewed by committee for final recommendations for acceptance to the Fellowship Director.

The year-long fellowship program runs concurrent with fellows' undergraduate academic calendar, with international travel opportunities to project locations during summer semesters. For the first two months, fellows are taught about LFR International's past program operations, global health evaluation techniques, and research project development. During biweekly sessions, fellows engage in real-world, case-based learning with their peers, providing the opportunity to work through problems while engaging with a variety of perspectives. After the initial skill-development block, fellows participate in a structured needs-finding process, in collaboration with local officials in program locations, to identify key areas of development and draft project proposals with paired mentors. Proposals are subject to an internal peer-review process designed to emulate that of academic journals and external institutional ethical review, allowing students to participate in a hands-on academic review process. Following the design block, fellows then collaborate with experienced international mentors and partners to execute their joint projects. Following completion of the fellowship, interested fellows are given an opportunity to continue participating in ongoing projects within the organization, often in a program management capacity.

In addition to facilitating local first aid training sessions and supporting the development of supply chain infrastructure for first aid kits, past fellow projects have included collaborating with physicians and midwives in Uganda to design an emergency medical and obstetrics curriculum, constructing a contextually-adapted dispatch protocol for resource-limited settings, conducting literature reviews on various prehospital interventions in

LMICs, and developing survey tools to assess responder mental health and areas for early intervention.

Despite the impact of these initiatives, fellows have never provided medical care. Projects are undertaken after a thorough needs assessment is completed by local healthcare providers and public health officials, resulting in subsequent approval of programmatic objectives. In this way, each fellows ensures that local experts have been consulted and objectives have been appropriately adapted prior to any implementation processes.

Theoretical approaches to learning

Kolb's experiential learning theory served as a framework for curriculum development of the EMCI Fellowship. The four-stage cyclical process, which is integral to service-learning experiences, encompasses concrete experience, reflective observation, abstract conceptualization, and active experimentation [8]. Based on this framework, fellows implement concrete skills developed during the first two didactic months by engaging in hands-on experiences tailored to their interests. Subsequently, mentorship sessions help to facilitate internal reflections of individual fellows' strengths and areas for improvement, allowing fellows to draw connections between their experiences and the broader conceptual frameworks relevant to global health. This process culminates with real-world projects, where fellows work with local partners to implement their programs into existing systems, encouraging sustainability and capacity strengthening. After their fellowship year, they may guide new fellows in continuing these projects, highlighting the program's cyclical and mentorship-based approach. This interactive experience ensures that fellows not only acquire practical skills and knowledge, but also cultivate a deeper understanding of the complexities of global health. Working within a global context requires fellows to reconsider existing perspectives and incorporate new frameworks into their existing educational knowledge for a more nuanced understanding of regional healthcare issues.

The EMCI Fellowship curriculum focuses on four main educational components integrated throughout the year: (1) professional development and networking, (2) global health education, (3) scientific research, and (4) internationally engaged collaboration. The learning objectives and corresponding example activities for each component are summarized in Table 1.

Program Assessment

Over a six year period (2019 to 2024), annual cohorts were composed of two to six fellows, averaging 3.67 fellows per cohort (22 total). The deliberate decision to maintain a small and selective cohort size aims to cultivate individualized mentorship and offer feasible project development opportunities based on organizational bandwidth.

Assessment of the program was conducted through open-ended survey responses by the 2022 and 2023 cohorts, along with outputs by all previous fellows. A pre-survey was administered at the onset of the fellowship program, followed by a post-survey upon its completion. Thematic analysis was performed on all qualitative survey responses to identify common themes.

Results

Demographics

Fellows ($n = 9$) were evenly distributed among undergraduate years, with 22.2% ($n = 2$) in each and one post-graduate gap year student. Every fellow reported prior teaching experience, with 66.6% ($n = 6$) as a teaching assistant/tutor, 33.3% ($n = 3$) as a leader in a mentor program or as a first aid/CPR instructor, and 22.2% ($n = 2$) training other emergency medical technicians (EMTs). Two first-year undergraduate fellows did not have any prior research experience. The remaining fellows engaged in biological (77.8%, $n = 7$), sociological (22.2%, $n = 2$), and clinical research (11.1%, $n = 1$). All fellows were CPR/BLS certified and 66.6% ($n = 6$) were Nationally Registered EMTs.

Survey results

As seen by the pre-questionnaire answers in Table 2, Fellows were most interested in conducting research, teaching, and learning about the publication and grant-writing processes, which aligns with the current, ongoing goals of the program. Based on the post-questionnaires completed following their fellowship year, fellows most highly valued their international program implementation and skills developed while participating in research. All nine fellows reported accomplishing their intended goals during the fellowship and over half indicated their interest in continuing to work with LFR International. Additional quotes regarding fellows' personal development and reflections on their individual experiences were compiled (Supplemental Material).

Program outputs

Since the origin of the EMCI Fellowship Program, fellows have contributed to eight peer-reviewed publications and nine academic conference presentations during their fellowship year. Fellows secured seven institutional undergraduate research grants totaling $31,000, with an additional $30,000 of organizational funding allocated to fellow-initiated programs. A total of seven fellows traveled internationally to implement prehospital care systems in Sierra Leone, Guatemala, Uganda, and Nigeria, directly training 1,898 emergency first responders in basic trauma care and 95 local trainers to ensure regional self-sustainability. Past fellows have proceeded to United

Table 1 Curricular components of EMCI fellowship

Component	Learning Objectives	Example Activities
Professional development and networking	1) Understand fundraising and grant writing principles in nonprofit global health organizations 2) Develop skills in project proposal design, budgeting, and fundraising strategies for international initiatives 3) Cultivate networking skills to build and sustain professional relationships with peers, mentors, and global health experts	1) Didactic education sessions on academic grant identification, writing procedures, and grantsmanship 2) Supervised development of project proposals and accompanying internal and external grant applications 3) Frequent meetings with fellowship cohorts and the LFR International team, along with participation in research conferences; organized networking sessions for career advancement in global nonprofit sector, medical school, and academic research.
Global health education	1) Understand the unique challenges and opportunities for providing prehospital care in LMICs 2) Gain knowledge of global health disparities, health systems strengthening, and cultural competence 3) Acquire skills in working effectively in diverse, cross-cultural settings	1) Case studies to analyze past first responder programs and future development considerations 2) Training meetings on global health evaluation techniques and decolonizing global health 3) Implementation of basic trauma courses for lay first responders in collaboration with local partners in Sierra Leone, Guatemala, Uganda, and Nigeria
Scientific research	1) Develop a thorough understanding of research methodologies for prehospital care and global health 2) Gain proficiency in study design, data collection methods, statistical analysis, and critical literature evaluation 3) Understand principles of research ethics and responsible conduct of research in both U.S. and LMIC contexts 4) Acquire skills in formulating research hypotheses, objectives, and methods for research proposals 5) Learn to effectively communicate research methods, results, and implications in manuscripts and presentations	1) Monthly didactic series on research evaluation tools and levels of evidence for systematic review 2) Three-part training course in statistical analysis using R with elective continuing education modules 3) Didactic sessions on the institutional review board process and direct involvement in domestic and international IRB submission alongside local partners 4) Writing and publishing scoping reviews on the states of prehospital infrastructure in LMICs 5) Writing, publishing, and presenting prospective academic research including: educational outcome evaluations, computational modeling and simulation, qualitative survey and Delphi method studies, randomized control trials for clinical and educational interventions.
Internationally engaged collaboration	1) Learn needs assessment methodologies for identifying gaps in prehospital care infrastructure 2) Develop cross-cultural communication skills for collaboration with local stakeholders and organizations 3) Acquire skills in strategic planning, monitoring and evaluation, and quality improvement to ensure organizational and programmatic sustainability 4) Understand the role of international aid in building sustainable healthcare infrastructure and capacity in LMICs 5) Learn to design and implement capacity-building initiatives to strengthen international healthcare systems	1) Development of survey tools to assess responder mental health and identify key areas for early intervention 2) Creation of a medical and obstetrics curriculum guided by international physicians and obstetricians 3) Develop organizational infrastructure documents, including readiness to implement checklists, process evaluation protocols, and logic models. 4) Collaboration with local nonprofits to create local resupply networks for responders and train local trainers for course implementation 5) Development of a contextually-adapted dispatch protocol for LMICs

States Medical Doctor (MD) programs after their fellowship, including the University of Michigan, Washington University in St. Louis, the University of Pennsylvania, Northwestern University, Wayne State University, and the University of Missouri. Fellows have also pursued careers in academic research and healthcare consulting.

Discussion

The EMCI Fellowship is a model similar international non-governmental organizations may follow to address global health deficits while permitting undergraduates to gain hands-on global health and operational management experiences. The program utilizes a cyclical, reflective learning model that integrates professional development, mentorship, global health education, scientific research, and international collaborations into activities. Encouraging fellows to develop and implement their own projects resonates with their goals to conduct research, cultivate teaching and critical thinking skills, and enhance prehospital care delivery. The favorable reception of the fellowship program is evidenced by participants' satisfaction with their achievements, successful academic outputs, participant placement in advanced degree programs, and desire for ongoing involvement in LFR International. The program's format is tailored toward participants' individual goals, fostering collaboration, leadership development, and networking opportunities. By combining didactic instruction with experiential learning, fellows gain firsthand experience applying their skills in real-world contexts and collaborating with international healthcare organizations.

Immersive and active involvement in global health organizations enhances students' likelihood of working with underserved populations in their careers and

Table 2 Fellow survey responses prior to Fellowship Year and after Fellowship Year

Survey Answer Theme	*Supporting Quotes*
Prior to Fellowship Year	
Question 1: What educational experiences are you most looking for in the LFR Fellowship?	
Conduct research (*n* = 7)	❖ "Looking to understand the process of conducting clinical research with human subjects" ❖ "How to conduct research and how research works in general"
Gain teaching and critical thinking skills (*n* = 6)	❖ "Broadening and diversifying my knowledge of pre-hospital emergency medicine and having the opportunity to be creative in finding ways for that care to be provided" ❖ "Excited to improve my teaching skills in this setting"
Learn about publication/ grant process (*n* = 3)	❖ "Applying for research grant funding as well as increase my confidence level in writing academic manuscripts describing my research findings" ❖ "Learning to effectively write scientific publications that communicate my methods and findings"
Advance prehospital care (*n* = 2)	❖ "Most looking forward to exploring the hands-on world of advancing prehospital care" ❖ "Learning the best ways to more efficiently treat people in a prehospital environment"
Expand cultural competency (*n* = 2)	❖ "Interact with members of a different culture in a health-care focused manner" ❖ "I'd love to travel and teach prehospital emergency treatments to people around the world"
Question 2: What do you hope to accomplish by the end of the LFR Fellowship?	
Implement/improve LFR model (*n* = 6)	❖ "I hope to successfully conduct a research project/find a solution to a problem/find or develop something that will lead to better provision of EMS in low-income settings" ❖ "I want to feel like I have helped make a tangible improvement to the quality of care in LMICs either by helping teach or by implementing a specific solution in one of the countries LFR works with"
Publication output (*n* = 5)	❖ "I hope to apply for a research grant and contribute to an academic manuscript"
Expand research skills (*n* = 6)	❖ "Assist with meaningful research and expand my research comfortability with human subjects and on a global scale"
Develop individual project (*n* = 3)	❖ "Confidently identify a problem and then be able to organize and outline a solution or possible solutions" ❖ "Assist with an ongoing project as well as begin my own project that I could follow through on early stages, data collection, and publications"
Question 3. What is your biggest fear or hesitancy about engaging in the LFR Fellowship?	
Limited previous experience (*n* = 4)	❖ "I don't have as much emergency medicine experience as previous fellows, putting me at a disadvantage to understand the emergency medicine-related needs of LMICs"
Falling behind on project timeline (*n* = 3)	❖ "Not being completely sure how to allocate my time between focusing on one specific project or trying to help with multiple different things and also the timeline for when we might look to accomplish certain goals"
After Fellowship Year	
Question 1. What was your most transformative education experience from the LFR Fellowship?	
International trip (*n* = 4)	❖ "I feel like I have become even more impassioned to make an impact in this field after understanding the current trials and tribulations that people from LMICs face" ❖ "Going to Uganda for 6 weeks!"
Research design and analysis (*n* = 3)	❖ "Through this one project, I was able to gain experience applying for a grant, writing an abstract, managing a research team, recruiting participants, and running a research project"
Grant writing (*n* = 2)	❖ "I had no experience in that area, so it was exciting to watch our proposal come together and yield a favorable result"
Question 2. Do you believe you accomplished what you intended during the LFR fellowship? Is there anything else you would have liked to accomplish?	
Yes (*n* = 9)	❖ "At the conclusion of the fellowship, I grasped the overall operational process of the organization and gained insights into the essential elements necessary for constructing a program of this nature" ❖ "I feel I have a much better understanding of how to approach challenges within global health and am extremely grateful for the connections I have made and the opportunities this fellowship has afforded me"
Would have liked more involvement in fellowship projects (*n* = 3)	❖ "I don't feel like I made it very far in my project and I would have liked to have more to show for it. I think there were a lot of hurdles that my partner and I ultimately couldn't figure out on our own" ❖ "I would have like to have a more direct project, and have it have gone further but that is still something I could accomplish"
Want to continue involvement in future projects (*n* = 5)	❖ "I want to continue working on the implementation of first responder training in academic settings" ❖ "Ideally would've liked to do more with OB on a clinical pre-hospital level but hopefully a work in progress"

cultivating more positive attitudes towards marginalized patient communities [9, 10]. Furthermore, integrating nonprofit management training into undergraduate medical training education helps to foster a cultural shift towards a sustainable and engaged medical workforce [5]. The EMCI Fellowship has not only developed fellows' individual academic research portfolios but has also enhanced their project management and cultural communication skills, positioning them for successful careers in global health and medicine. Additionally, the fields themselves benefit from a more engaged, informed, and competent workforce. In this way, the program has the

potential to enhance productivity and sensitivity towards complex global health issues among prospective trainees.

At an organizational level, this fellowship program has enhanced our organization's capacity to affect change within our field, improved the recruitment of new staff members to increase organizational capacity, and extended the reach of our mission. The program structure demands time investment from mentors, most of whom are volunteers on the LFR staff, and as a result, the organization incurs minimal expenses from running the fellowship. The only associated costs are CPR instructor certifications, if not held by fellows already, and travel to international locations, which is typically offset by institutional grants secured by the fellows. The program could be further enhanced with additional funding mechanisms to cover expenses for research conferences, certifications such as an EMT license, and stipends for the Fellowship Director, mentors, and exemplary fellows. Currently, fellows are limited by the capacity of organizational funds to implement projects. Establishing a fellowship-specific funding mechanism could provide greater flexibility for fellows to create new programs beyond just covering travel costs.

Acknowledging the two-year data collection limit, we are actively addressing reported deficiencies in ongoing program development, particularly increasing fellows' involvement in projects during and after their fellowship year with established mechanisms for fellow-to-staff transitions.

Looking ahead, LFR International is working to expand the scope and formalization of future iterations of the fellowship program. The 2024 cohort is divided into Prehospital Care, Psychosocial Care, and Health Policy and Intervention Evaluation Fellows, reflecting the organization's expanding mission in policy evaluation and mental health support for responders. We have also utilized the undergraduate fellowship program's curriculum to initiate a public-health informed postdoctoral fellowship program for physicians from LMICs, beginning with two from Nigeria. This program is meant to enhance global educational interventions and increase local program sustainability. Continued iterative development will leverage insights from current cohorts and program alumni to refine competencies and assess long-term outcomes.

Conclusions

The ECMI Fellowship effectively addresses gaps in global health education by providing undergraduates with valuable hands-on experience in international project implementation and operational management. This program's combination of didactic instruction and experiential learning cultivates skills in research, teaching, and global health collaboration. Using a model that can be replicated by similar global health nonprofits, fellows benefit through enhanced academic outputs, advanced degree program opportunities, and promotions in LFR International. Future plans include broadening fellowship concentrations to encompass additional global health fields and evaluating longitudinal impacts.

Abbreviations

LFR	Lay First Responders
ECMI	Emergency Medical Care and Innovation
LMIC	Low–and middle–income countries
EMT	Emergency Medical Technician
MD	Medical Doctor

Supplementary Information

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Supplementary Material 1

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Author contributions

HP contributed to conception, design of work, analysis of data, and drafting of work. BM contributed to design of work, analysis of data, drafting of work, and revision of work. MCK contributed to design of work and revision of work. NJS contributed to revision of work. PGD contributed to conception and revision of work. ZJE contributed to conception, design of work, and revision of work. All authors read and approved the final manuscript.

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Data availability

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval

This study was deemed exempt by the Washington University in St. Louis Human Research Protection Office. Ethical approval for fellowship-related prehospital interventions was received from various review boards, including Washington University in St. Louis (St. Louis, USA), the University of Michigan (Ann Arbor, USA), Makeni School of Clinical Sciences (Makeni, Sierra Leone), University College Hospital Ibadan (Ibadan, Nigeria), and Masinde Muliro University of Science and Technology (Kakamega, Kenya). Informed consent to participate was obtained from all participants in this study.

Consent for publication

Not applicable.

Clinical trial number

Not applicable.

Competing interests

The senior author, Zachary J. Eisner, serves as an editor for BMC Medical Education.

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References

1. Kutalek R, Lahlal M, Kaawa-Mafigiri D, et al. Putting global health high on the agenda of medical schools. Wien Med Wochenschr. 2023;173(5–6):131–7. https://doi.org/10.1007/s10354-022-00974-7.
2. Yudkin JS, Bayley O, Elnour S, Willott C, Miranda JJ. Introducing medical students to global health issues: a bachelor of Science degree in international health. Lancet. 2003;362(9386):822–4. https://doi.org/10.1016/S0140-6736(03)14276-6.
3. Matheson AI, Walson JL, Pfeiffer J, Holas K. Sustainability and Growth of University Global Health Programs. University of Washington Department of Global Health; 2014. https://www.csis.org/analysis/sustainability-and-growth-university-global-health-programs.
4. Varkey P, Peloquin J, Reed D, Lindor K, Harris I. Leadership curriculum in undergraduate medical education: a study of student and faculty perspectives. Med Teach. 2009;31(3):244–50. https://doi.org/10.1080/01421590802144278.
5. Thornton J. Doctors need to step up—why are there still so few medical chief executives in the NHS? BMJ. Published Online June. 2019;25:l4341. https://doi.org/10.1136/bmj.l4341.
6. Clark J, Armit K. Attainment of competency in management and leadership: No longer an optional extra for doctors. Rogers H, ed. Clin Gov Int J. 2008;13(1):35–42. https://doi.org/10.1108/14777270810850616
7. Jacobsen KH, Waggett CE. Global health education for the post-pandemic years: parity, people, planet, priorities, and practices. Glob Health Res Policy. 2022;7(1):1. https://doi.org/10.1186/s41256-021-00234-y.
8. Zhou M, Brown D. Experiential Learning Theory. In: LibreTexts Social Sciences. GALILEO Open Learning Materials. December 2023.
9. Slifko SE, Vielot NA, Becker-Dreps S, Pathman DE, Myers JG, Carlough M. Students with global experiences during medical school are more likely to work in settings that focus on the underserved: an observational study from a public U.S. institution. BMC Med Educ. 2021;21(1):552. https://doi.org/10.1186/s12909-021-02975-3.
10. Ibrahim GM, Hoffart S, Lam RA, Minty EP, Ying M, Schaefer JP. Think global, act local: medical students contextualize global health education. Educ Health. 2014;27(1):55. https://doi.org/10.4103/1357-6283.134315.

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