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Ethics Simulation in Global Health Training (ESIGHT)

Shunei Asao, Brett Lewis, James D. Harrison, MPH, PhD, Marcia Glass, MD, Tina Penick Brock, MSPH, EdD, Madhavi Dandu, MD, MPH, Phuoc Le, MD, MPH*

*Corresponding author: phuoc.le@ucsf.edu

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Abstract

Introduction: Many health care trainees and providers have reported feeling unprepared for the ethical dilemmas they faced while practicing in global health. Simulation is an effective teaching modality in the training of health care professionals. This resource describes the development, implementation, and assessment of an innovative simulation training program for global health ethics. **Methods:** We conducted simulation training with trainees and professionals from various health care disciplines. After a didactic component in which general ethical principles were introduced, participants acted as either lead or observer in four simulations representing different ethical challenges. Participants interacted with simulated patients within a set designed to resemble a resource-constrained environment. Data on the participants' experiences and evaluations of the program's effectiveness were collected through pre-/postsession surveys and focus groups. **Results:** All 53 participants (100%) agreed that the simulations "effectively highlighted ethical dilemmas I could face abroad," and 98% agreed that the content "was useful in my preparation for an international elective." Responses from surveys and focus groups stressed the importance of the realistic and emotional nature of the simulation in increasing confidence and preparedness, as well as a preference for simulation as the modality for teaching global health ethics. **Discussion:** Simulation for global health ethics training can help to raise awareness of the complex ethical challenges one may face abroad. Incorporating simulation training within broader global health curricula can improve trainee preparedness and confidence in appropriately and effectively identifying, strategizing, and navigating through ethical dilemmas in the field.

Keywords

Ethics, Global Health, Medical Ethics, Simulation Training

Appendices

A. Guidelines for Faculty-Led Debriefing.docx
B. Presurvey.docx
C. Postsurvey.docx
D. Scenarios.docx
E. Sample Flow Schedule.pdf

All appendices are peer reviewed as integral parts of the Original Publication.

Educational Objectives

By the end of the session, participants should be able to:

1. Have a heightened awareness of complex ethical issues in global health.
2. Feel more predeparture preparedness and confidence about working through ethical dilemmas that they may encounter in the field.
3. Critically analyze the potential consequences of ethical choices on different stakeholders.
4. Develop a strategy for approaching ethical issues related to scope of practice, voluntary informed consent, privacy and confidentiality, professional ethics, harm and benefit, and corruption.
5. Identify someone as a resource for discussion and advice regarding various ethical dilemmas.

Introduction

Growth in global health programs for health professional trainees has led to increased awareness of the potential risks and consequences of sending trainees to resource-constrained countries without proper preparation.[1-3] Although groundwork in ethics has become an integral part of general health professional training,[4] trainees often report experiencing specific ethical dilemmas while working in resource-constrained international settings. Common dilemmas include being asked to perform outside of their

scope of practice and giving a patient a diagnosis when treatment is unaffordable. Trainees experience guilt and extreme unease over the unintended harm they may cause in these situations.[5] In addition, this unease is dual-edged. In a recent survey of Ugandan medical trainees in a tertiary care hospital, 31% responded that they were uncomfortable with the ethics of clinical behavior displayed among foreign faculty and trainees.[6] Despite recommendations by expert advisory groups such as the Working Group on Ethics Guidelines for Global Health Training and the Consortium of Universities for Global Health consensus global health core competencies,[7,8] it is only recently that academic global health programs began to include robust training in the ethical aspects of global health. In addition, though recent literature critiquing health care trainees' participation in global health electives tends to focus on the need for better predeparture preparation, few describe what teaching modalities should be used for such preparation.

Simulation training has gained popularity in health professions education[9] and has been endorsed by accrediting bodies as an effective educational tool for skills development[10] given its effectiveness in a variety of settings for learners and observers.[11-15] The Romanell Report[3] suggested that role-play scenarios, including those with simulated patients, are highly effective for teaching general ethics and professionalism. However, despite this potential, the use of simulation to teach global health ethics remains relatively unexplored. A program by Butteris and colleagues[16] demonstrated that simulations could successfully elicit powerful emotions and provide a stimulus for pediatric residents to experience ethical dilemmas in a controlled setting before encountering them abroad. Along a similar line, we developed, implemented, and evaluated a simulation-based global health ethics training program for a diverse group of health care professionals preparing to work in resource-limited settings. The aims of our program are to raise awareness of complex ethical issues in global health, train interprofessional participants to critically analyze the potential consequences of ethical choices on different stakeholders, and increase the predeparture preparedness and confidence of participants to be able to work through ethical dilemmas that they may encounter in the field.

Methods

We followed a modified Kern[17] methodology to identify the problem, perform general and targeted needs assessments, develop goals/objectives, implement the program, and evaluate the training program. We conducted this curriculum at the University of California, San Francisco (UCSF). We collected data over two periods: (1) fall 2013, with trainees from the Schools of Dentistry, Medicine, Nursing, and Pharmacy who were part of the campus Global Health Clinical Scholars Program,[18] and (2) fall 2014, with an interprofessional group of trainees and practitioners from nursing, medicine, pharmacy, and physical therapy who were part of our Global Health Continuing Medical Education Program.[19] The UCSF Committee on Human Research reviewed the project and determined it to be exempt from full review.

Development and Mapping of the Simulations

In a previous study, we identified ethical issues of global health that health professional trainees may encounter during electives or placements in resource-limited countries.[20] We conducted a qualitative study involving focus groups and interviews. Four themes were identified: (1) cultural differences (informed consent, truth telling, autonomy), (2) professional issues (power dynamics, training of local staff, corruption), (3) limited resources (scope of practice, material shortages), and (4) personal moral development (dealing with moral distress, establishing a moral compass, humility and self-awareness).

From the themes and specific ethical issues identified, we developed a training program composed of four 10-minute-long trainee simulation scenarios and four 15-minute-long faculty debriefing guides. The simulations were designed to train participants to critically analyze the potential consequence of their ethical choice. We selected scenarios that we felt covered a variety of situations and dilemmas health care workers encounter in global health work. We also intentionally designed each scenario to address specific ethical issues—corruption, scope of practice, informed consent—within broader ethical categories such as cultural differences and limited resources.

Mapping of simulation scenarios to themes and ethical issues:

- Pericardiocentesis (scope of practice): While working in a clinic abroad, the participant is asked to provide care for a patient who has been admitted to the hospital. The local nurse informs the participant that the patient has shortness of breath, distant heart sounds, and dangerously low blood pressure; was treated for TB several years ago; and has been started on antibiotics for pneumonia. The participant performs an ultrasound and finds that the patient has a large pericardial effusion with signs of impending tamponade. Throughout the simulation, the patient's blood pressure continues to drop despite aggressive fluid replacement. The only option to save the patient's life appears to be performing a pericardiocentesis, which the participant is not trained to do. Since the only physician in the hospital is unavailable, the nurse attempts to convince the participant to perform the procedure.
    - Ethical categories: cultural differences, professional issues, limited resources, personal moral development.
    - Ethical issues: informed consent, extent of training of local staff, humility and self-awareness.
- Pharmacy (corruption): The participant is representing his/her home institution while assisting at a pharmacy in a hospital abroad. That institution has been directly supporting the procurement of medications in an ongoing partnership with the hospital. While examining the pharmacy's stock, the participant and pharmacist discover they are low on a specific medicinal product. The local physician suspects that the senior pharmacist is the culprit responsible for the low stock. The hospital director, however, comes in and defends the pharmacist, who has been diverting the products from the pharmacy to provide free care for patients at a local church-run clinic. This starts a heated argument between the physician and the hospital director on the ethical uses of medication funded by the participant's home institution. The participant must decide how to proceed with this situation and whether he/she has an obligation to report the misuse of medication to his/her home institution.
    - Ethical categories: cultural differences, professional issues, limited resources, personal moral development.
    - Ethical issues: truth telling, corruption, material shortage, establishing a moral compass.
- HIV positive (privacy/confidentiality): The participant is working in a resource-limited country on a study examining the effectiveness on HIV-positive women of a new anti-retroviral drug administered during labor. In this scenario, a pregnant woman has tested HIV positive, and it is up to the participant to advise her on what she should do next. The woman discloses that she has had sexual relations with two men from the community in the past year. She is afraid that if she tells her husband, she will certainly be thrown out of the house and may even face physical harm from her husband and others in her community.
    - Ethical categories: cultural differences, professional issues, limited resources, personal moral development.
    - Ethical issues: privacy and confidentiality, dealing with moral distress.
- Obstructed labor (voluntary informed consent): The participant is an advanced public health nurse engaged in work related to his/her doctoral research project in a rural village. The participant is conducting home visits with a local community health worker when he/she encounters a 14-year-old girl who has been in labor for 2 days. The girl is at home with her mother-in-law, as her husband is currently away on business and unreachable. She is in obvious distress and upon examination is determined to have obstructed labor, most likely due to female genital cutting and/or cephalopelvic disproportion (related to both chronic malnutrition and her young age). The ideal solution is to take the girl to the nearest hospital; however, it is a 3-hour drive away, and according to her mother-in-law, the girl is strictly not allowed to travel without her husband's approval.
    - Ethical categories: cultural differences.
    - Ethical issues: informed consent, privacy and confidentiality.

Creation and Staffing of the Simulations

We designed the simulations to reflect the cultural and resource-limited aspects of health care in Sub-

Saharan Africa. Aiming for a high-fidelity experience, we used props to make the space look, sound, and feel as authentic as possible. We hired professional actors through the UCSF Kanbar Center for Simulation, Clinical Skills, and Telemedicine Education.[21] The actors were matched racially to the geographic setting of each simulation. These simulated patients[22,23] enacted scenarios from defined learning objectives and scripts. We held an in-person training session and rehearsal 2 weeks before implementation of the curriculum, in keeping with standard protocol for simulated patients. Our facilitators all had prior experience with small-group facilitation and met to go through the debriefing guide before the training. They also debriefed together after the simulation took place.

Implementation of the Simulations

Participants completed the four 10-minute scenarios in groups of two to four. In each scenario, one of the participants was assigned to lead (i.e., interact directly with the simulated patient) while the remaining group members observed in close proximity. During the simulation, faculty facilitators observed the interaction behind a one-way mirror. Following each simulation and again at the conclusion of all four simulations, a faculty facilitator with experience in global health ethics conducted a 15-minute debriefing session. During these sessions, the facilitator asked a predetermined set of questions regarding the participants' simulation experiences and then guided an open-ended discussion (see Appendix A). These debrief sessions were essential and provided participants a chance to process and reflect on each scenario, while also allowing our team to learn more about how participants reacted to and learned from the scenarios. We typically ran the simulations in a 3-hour module and had two concurrent simulation rooms running different scenarios. This allowed for up to eight groups of four or five trainees per group to complete each scenario and debrief (see Appendix E for a sample logistical schedule). A short video offering an overview of the ethics simulations can be found at https://healinitiative.org/curriculum/bootcamp/.[24] It is recommended but not required that faculty facilitators view this.

Data Collection

Prior to initiating the first scenario, participants completed a four-item presimulation survey (Appendix B) designed to assess their previous exposure to and comfort with managing global health ethical dilemmas. After debriefing of the last scenario, participants completed a matching postsimulation survey with an additional six open-ended items designed to assess their overall experience and perceptions of the curriculum (Appendix C). After the conclusion of the simulation session, we recruited six participants for a focus group aimed at obtaining more in-depth feedback about the curriculum. The focus group's discussion was audio-recorded and then transcribed verbatim for analysis. The simulation scenarios are included in Appendix D.

Statistical and Data Analysis

We used descriptive statistics (SPSS 22.0) to analyze data collected from the closed-ended items on the pre- and postsimulation surveys. To determine the impact of the simulations, we used paired *t* tests for normally distributed data and the Wilcoxon signed rank test for nonnormally distributed data to compare participants' mean level of agreement on whether they had strategies to deal with each ethical situation pre- and postsimulation. We used content analysis to analyze open-ended items from the pre- and postsimulation surveys and the focus group.[25] This analytic technique systematically examines material in order to obtain a condensed description of content.[26] Two team members independently conducted open coding. They then grouped the codes into higher order categories[25] that summarized the collective themes. Any coding differences were discussed and resolved through negotiated consensus.[27]

Results

Participants

Fifty-three people participated in the global health ethics simulation training program. Participant characteristics are shown in Table 1. The majority of participants were from the medical field (70%), with the second highest representation from nursing (24%). Most (89%) of the participants had some prior global health experience, having spent on average 4.15 months in resource-constrained settings abroad

(the overall time spent abroad ranged from 0 to 24 months). Only 21% had completed training specifically related to global health in the past 2 years.

Table 1. Participant Characteristics

	2013 Cohort Trainees (*N* = 27)		2014 Continuing Education Participants (*N* = 26)	
Participant Characteristic	***n*** **(%)**	**M (SD)**	***n*** **(%)**	***M*** **(*SD*)**
Gender				
Male	6 (22%)		6 (23%)	
Female	21 (78%)		20 (77%)	
School/professional background				
Dentistry	1 (4%)		0 (0%)	
Medicine	17 (63%)		20 (77%)	
Nursing	7 (26%)		5 (19%)	
Pharmacy	1 (4%)		0 (0%)	
Physical therapy	0 (0%)		1 (4%)	
Setting/role				
Works in academic setting	N/A		8 (31%)	
Teaches as part of professional role	N/A		18 (70%)	
Prior knowledge				
Global health training	5 (19%)		6 (23%)	
Global health experience	24 (89%)		23 (89%)	
Number of months abroad		4.90 (5.72)		3.36 (4.74)

For participant characteristic groups where percentages do not total 100%, data are missing.

Exposure, Experience, and Effectiveness

While most of the participants had some experience in global health, many participants had never been previously exposed to the ethical issues used in the simulation scenarios. In addition, a number (18%) of participants had never been exposed to ethical issues relating to scope of practice. The same was true for harm and benefit (22%), privacy and confidentiality (19%), professional ethics (18%), voluntary informed consent (30%), and corruption (54%).

When participants were asked about the simulations themselves, their answers were based on the entire simulation curriculum, which included all four scenarios. All participants agreed that the simulations were realistic, highlighted ethical dilemmas that could be encountered in resource-constrained settings, and were useful for preparing for an international health care experience. One hundred percent of participants agreed that the ethics simulations "effectively highlighted ethical dilemmas I could face abroad," 98% agreed that the content of the simulations "was useful in my preparation for an international elective," and 93% agreed that the simulations "made me more aware of ethical subtleties."

Both before and after the simulation exercise, participants were asked to rate their ability to deal with specific ethical issues. In every instance, participants felt significantly more confident in their respective abilities after participating in the simulations (Table 2).

Table 2. Pre- and Postsimulation Comparison of Participants' Ability to Handle Specific Ethical Issues

	Presimulation[a]		Postsimulation[a]		
Item	***M*** **(*SD*)**	***Mdn***	***M*** **(*SD*)**	***Mdn***	***p*** [b]
Has a strategy to deal with the following ethical issue:					
Scope of practice	3.00 (1.11)	3	1.94 (0.66)	2	<.01
Voluntary informed consent	2.46 (1.04)	2	2.04 (0.75)	2	.01[c]
Privacy and confidentiality	2.32 (0.87)	2	1.79 (0.63)	2	<.01
Professional ethics	2.55 (1.03)	2	1.89 (0.61)	2	0.02
Harm and benefit	2.75 (0.98)	3	1.96 (0.59)	2	<.01
Corruption	3.49 (1.05)	4	2.30 (0.89)	2	0.02

[a]Five-point Likert-type scale (1 = *strongly agree,* 5 = *strongly disagree*).
[b]Comparisons made using paired *t* tests, unless otherwise specified.
[c]Comparison made using Wilcoxon signed rank test.

Open-Ended Survey Questions and Focus Groups

The postsimulation survey and the focus group let participants provide feedback on their experience as well as on the perceived effectiveness of the simulation sessions. Feedback relating to the experience of the simulation has been categorized in the following list:

- Realism and emotional state: Many participants believed that the simulations were realistic and put them in mental or emotional states similar to those felt while encountering an ethical dilemma in a resource-constrained setting.
    - "I almost cried. It was very overwhelming"—medical student.
    - "The scenarios were played out in such a way that. . . . And the actors, both the ladies were really professional in the way they were in creating the intense environment. Even I would like to think of myself as really calm, but I could feel the heat"—dentist.
    - "I thought this ended up being more realistic than I had expected. Having actors from the scenario's racial, cultural, linguistic background was very helpful. I felt the anxiety rise during the simulations and fall during reflection"—resident physician.
- Group experience: Many participants said that in addition to being the lead participant, they also benefited from simply observing the simulations.
    - "I think that when you are not actually performing it's a little bit easier to imagine multiple responses and kind of rehearse those emotionally and settle on one that felt more comfortable to you. I think it was a little bit harder for me to rehearse a couple different responses when I was in real time trying to interact with somebody"—pediatrician.
    - "I was in the TB [pericardiocentesis (scope of practice)] scenario first. After I had gone through it, I had asked a few other people that are nurses [from another group], 'If you were in this scenario, what would you have done?' And everyone else would have done the opposite of what I would have done. I almost wish I was in the scenario where someone was going to do the opposite of what I was going to do because I wanted to know why. I don't want to hear what I want to do because I already know what I'm going to do. At least to have someone challenge me"—nurse.

Feedback relating to the effectiveness of the simulation has been categorized in the following list:

- Effectiveness compared to traditional modalities: Many participants agreed that simulation-based training was more effective than traditional approaches to teaching global health ethics.
    - "It's easy to argue about those scenarios on paper and say, 'I hope I would be able to say this' . . . but if you're actually faced with the scenario and you're getting real-time reactions to the things you're saying and it's driving you in different directions. . . . You don't think about those things necessarily in that very real and jarring way"—medical resident.
    - "I think it avoids the scenario where it's easy to come up with an answer because you're not able to say the first thing that comes to your head and go, 'Oh, that seems like that would work.' You have to actually deal with the ongoing consequences"—nurse practitioner.
- Effectiveness in the field: Many participants felt that the simulations better prepared them for the ethical dilemmas they may face in global health.
    - "I think it's not meant to make us comfortable with the situation, because I don't know that any of us will ever feel comfortable, or I hope I'm not ever completely comfortable with this. But I think just putting yourself in that situation, feeling that sense of anxiety and being able to say okay, I've felt this before. How can I walk through it and still be calm and come up with something that I'm ethically okay with"—global health fellow.

In talking about their personal experience with the simulation, participants tended to focus on the realism of the scenarios and the intense emotion and anxiety they experienced both as the scenario leader and as an observer. Many participants also brought up their experience of being part of a larger, diverse group of health professionals and how that affected their learning experience.

Both in the postsurvey and in the focus group discussions, participants unanimously supported the simulation training over traditional approaches to ethics training, as the simulation forced them to think and respond in the moment and with real consequences. There was a general consensus that the scenarios did not teach what was right or wrong but rather prepared one to think critically and thoughtfully when faced with an ethical dilemma.

Discussion

To address the need for a quality preparation for global health experiences, we developed a simulation-based global health ethics training program. Similar to existing online[28,29] and classroom-based[30] curricula in global health ethics, our training highlighted the complexities in global health work using case-based scenarios. However, our program was novel in that it put participants through a realistic simulated scenario in which they were made to deal with real-time decisions and consequences. We found only one other study using simulation in global health ethics training,[16] although the focus of that particular study was on the emotions expressed by the participants, who were all pediatric residents. In the evaluation of our curriculum, we used a multiprofessional group of participants to assess the overall experience and effectiveness of simulation training in preparation for work in global health.

Participants highly valued the simulations, reporting that the combination of working through the scenarios and debriefing afterward made them feel better prepared for the ethical dilemmas they anticipate when working in resource-constrained settings. Our program familiarized participants with several common ethical issues and exposed participants to emotions felt when encountering an ethical dilemma in the field. It also provided an opportunity for participants to see how others would approach similar challenges.

Participants repeatedly reported feeling anxious, stressed, and overwhelmed during the simulations—the same emotions felt by individuals facing real ethical dilemmas. Our simulations appear to have elicited these emotions due to realistic settings and the acting of our simulated patients. The unique ability of simulation to incite a realistic mental state and behavior is a benefit in ethics training,[31] and we postulate that our simulations better prepared participants to tackle not only ethical issues specific to our scenarios but also any ethical issue that may arise in the field. While the traditional approach to teaching ethics consists of discussions around hypothetical situations, simulation training increases cognitive load[32] and enables participants to directly experience the emotional consequences of their decisions.[16] Experiencing this mental state and learning to work through it enables one to have improved emotional intelligence and be better prepared to think critically when faced with a similar real-life situation.[31,33-35] This was one of the key aspects that participants said made simulation learning more effective than traditional learning methods.

Participants generally agreed that actively participating in the simulations was incredibly useful. However, several participants stated that being an observer helped to relieve some of the pressure, making it easier to imagine and reflect on different potential responses. Furthermore, many participants said that when they were simply observing the scenario, they experienced the same emotions they had felt while leading it. Such vicarious learning has been shown to be an effective educational method[14,36,37] and adds to the group dynamic.

The debrief sessions also served as a way for participants to reflect on and discuss alternative options. Since the scenarios could be managed in a variety of ways, considering the possibilities was thought-provoking. In general, participants were very supportive of one another and tended to defend the actions of the leader.

Our results indicate that simulations could help trainees develop effective approaches to ethical dilemmas during global health experiences. In the absence of systematic and substantive educational guidelines regarding ethical challenges in global health work, incorporation of simulations within broader global health curricula may improve trainees' ability to deal with the ethical challenges they will inevitably encounter.

Operationalizing several simulations concurrently posed significant logistical challenges, including running over the allotted time for debriefing. Another challenge came from working with interprofessional participants. While we found that having a diverse cohort of participants was essential for providing various points of view, we did not anticipate the complications that would arise due to the fact that some scenarios catered to specific professions. For example, an emergency room physician who was the lead in the pericardiocentesis simulation felt perfectly comfortable performing such a procedure and thus faced no ethical dilemma. A physical therapist in the same scenario felt that she would never be placed in such a situation in real life and that such a simulation did not pertain to those from her profession. Finally, while we strived for realism and authenticity, our limited resources at times prevented us from achieving ideal standards of realism. For instance, the use of a white mannequin as a laboring child was not ideal for a case taking place in Sierra Leone.

There were also several limitations to evaluating our curriculum. First, our sample size was small and limited to just one institution. Second, follow-up was short as we were unable to systematically evaluate participants after they had returned from doing global health work abroad. This would have been useful in determining possible mental and behavioral changes after undergoing the simulation training. The shortness of follow-up also limited our ability to study the participants' perceived effectiveness of the simulation training during their actual international experiences.

Some of the participants felt that more context should be given before the actual simulations and that simulations inevitably lack the relationships and other contextual intimacies that are crucial to one's ethical decision making while in the field. Others, however, reported that the lack of understanding of one's situation was actually quite realistic and made participants wary of making assumptions, prompting them instead to seek out knowledge and help instead of trying to answer everything alone.

Finally, we have not validated an adequate evaluation tool to grade both participant and facilitator skills. In gathering and analyzing our data, our focus was on measuring overall experience of the curriculum itself rather than assessing individual performances. Additional studies are needed to develop evaluation tools for global health ethics simulations.

With the ever-increasing number of U.S. health sciences trainees going abroad to resource-limited sites, the mantra of "First do no harm"[2] should be the top priority in predeparture training. Thus, the need for effective ethics training has never been greater. Our results indicate that incorporating simulations within broader global health curricula may improve trainees' ability to deal with the ethical challenges they will inevitably encounter.

Shunei Asao: Undergraduate, Whitman College

Brett Lewis: Medical Student, Oregon Health & Science University School of Medicine

James D. Harrison, MPH, PhD: Associate Professor Researcher, Division of Hospital Medicine, University of California, San Francisco

Marcia Glass, MD: Associate Professor, Division of Hospital Medicine, University of California, San Francisco

Tina Penick Brock, MSPH, EdD: Associate Dean and Professor, School of Pharmacy, University of California, San Francisco

Madhavi Dandu, MD, MPH: Associate Professor, Division of Hospital Medicine, University of California, San Francisco

Phuoc Le, MD, MPH: Associate Professor, Division of Hospital Medicine, University of California, San Francisco

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Shunei Asao and Brett Lewis contributed equally to this publication.

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