

COMMENTARY

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Medical Student Involvement in Disasters: How Can We Effectively Serve?

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ABSTRACT During disasters, the roles of physicians, nurses, and ancillary medical staff are defined by their individual certifications, whereas the roles of medical students remain less clear. Medical students are unlicensed physicians-in-training, with variable degrees of skill and knowledge, and thus, their involvement in disaster response has historically varied. In light of the coronavirus disease 2019 pandemic, many junior students were asked to remove themselves from the hospital setting, whereas some senior students graduated early to join the physician workforce. In this article, the authors will examine the psychosocial benefits and consequences of medical student involvement in prior disasters and developing attitudes in light of the coronavirus disease 2019 pandemic. We conclude by offering our thoughts on medical student involvement in future disasters.

The impact of disaster relief and other potentially traumatic work on certain medical personnel including physicians, nurses, and first responders has been significantly studied over the past several decades, and the data regarding the psychological impact of working in these environments are mixed. Previous reports show that up to 81% of physicians who are involved in cases of poor patient outcomes develop troubling memories, and a majority report experiencing feelings such as guilt, anxiety, anger, and distress.¹ Conversely, positive outcomes such as increased resiliency and lower rates of burnout have been documented in medical personnel working in distressing environments, particularly in those who report high personal ratings of self and community efficacy.² While parallels likely exist, the impact of disaster work on medical students has not been as thoroughly examined as in their physician counterparts. This has increasing relevancy, as the COVID-19 pandemic brought with it many questions regarding the proper roles for medical students. A series of statements in March and April of 2020 by the Association of American Medical Colleges^{3,4} gave clear recommendations that schools temporarily suspend their students' clinical education, in some cases limiting student participation before it

could even begin. Following these pronouncements, the questions surrounding medical student relief work became even more timely.

There have been few studies that work to characterize the psychosocial effect of relief efforts on medical students. Much of the current understanding of the topic is from scant qualitative reports, and those reports can differ dramatically in their conclusions. These differences are evident, for example, in examinations of the Fukushima Daiichi nuclear disaster and the 2005 Kashmir earthquake. A 2016 study by Anderson et al. assessed the psychological impact incurred by medical students who volunteered to aid in disaster relief amid the 2011 Fukushima Daiichi nuclear disaster.⁵ The study utilized a survey that included elements from both the Davidson Trauma Scale and Posttraumatic Growth Inventory, which assess the frequency and intensity of Post-Traumatic Stress Disorder symptoms and 21 points of positive outcomes associated with trauma, respectively. The investigators compared the results of 132 medical student volunteers to 362 uninvolved medical student counterparts and found that following both the first month of the disaster, and 3 years thereafter, no significant differences in distressing symptoms (i.e., sadness, confusion, or anxiety) were experienced between the two groups. More so, when compared to non-volunteers, students who participated in the Fukushima disaster relief efforts reported significantly higher levels of posttraumatic growth, an increased desire to be a physician, and decreased feelings of guilt after the event. Thus, the study suggested that medical student involvement in disaster relief efforts supported personal growth with minimal psychological repercussions.⁵ This stands in stark contrast to a 2006 opinion

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piece coauthored by former medical students A. Sabri and M. Qayyam, both of whom performed direct patient care in response to the 2005 Kashmir earthquake. While volunteering, the authors reported heightened levels of psychological stress that was exacerbated by the fact that they had no prior training in disaster work and had minimal guidance from senior medical officials. Additionally, both authors felt their knowledge base to be inadequate—particularly with regard to trauma and triage—and felt that their involvement may have both hampered rescue efforts and worsened overall patient care.⁶

The above discrepancy in the reported psychosocial ramifications of disaster work on medical students highlights an important factor, namely, the level of student preparedness and knowledge of disaster medicine. Some medical schools have taken definitive steps at preparing medical students for potential disaster work in the future. For example, first-year medical students at Thomas Jefferson University who completed a series of lectures and skill sessions aimed at disaster preparedness agreed that it helped students contextualize many of the hardships faced in disaster scenarios and that the course should continue to be taught.⁷ Additionally, Ashcroft et al. recently completed a systematic review of the efficacy of 23 existing disaster trainings implemented for medical students worldwide. The studied training programs ranged in length from 1 day to 4 weeks with a median of 2 days, included both lecture and simulation-based teaching, and focused on trauma and broad disaster medicine principles as well as pandemic medicine. They found the courses to be effective in improving the overall knowledge base of participating students.⁸ A strong fund of knowledge of disaster medicine and the likely hardships that students may experience if sent to work may reduce experiences such as those reported after the 2005 Kashmir earthquake.

With recent events and the unprecedented demand for and on medical professionals comes a new focus on the roles of medical students; some students have themselves argued that there should be restrictions from participation in clinical work during the COVID-19 pandemic. In an article titled “Medical Students Are Not Essential Workers: Examining Institutional Responsibility During the COVID-19 Pandemic,” student authors noted that they are unpaid and susceptible to coercion and therefore should require institutional protection if they are to support a pandemic response.⁹ Meanwhile, students in the UK conducted a survey of 206 medical students to observe attitudes toward clinical work during the pandemic and found that 62.6% would be willing to perform direct patient care and 58.1% would do so even in unsafe environments.¹⁰ The clear willingness of many medical students to volunteer for relief work was also observed in a group of students at Harvard Medical School who built a medical student team of over 500 volunteers who responded to the COVID-19 pandemic. This cohort functioned in dual educational and clinical roles, educating their colleagues and the wider community on the basic science of the pandemic and also staffing certain

clinical positions in low-risk COVID-19 screening and PPE distribution.¹¹

Some physicians and those working in medical education agree with the utilization of medical students in COVID-19 relief.^{12,13} Authors at the University of Pennsylvania assert that medical students can work to mitigate demand on hospitals and medical personnel by working with routine patient visits and the chronically ill and on telehealth systems to ensure patient follow-up.¹² They additionally argue that, aside from the more organized disaster work, medical students who personally volunteer or go about their typical activities while suspended from clinical work are still at risk of spreading COVID-19, a key argument of detractors to student involvement in pandemic relief. Authors from the University of Wisconsin system argue that medical students are adult learners and as such can benefit from volunteer disaster work, although it is the educational institutions’ role in part to select the ways in which student participation is beneficial to all involved parties.¹³ It appears that both educators and students wish to effectively deploy medical students to aid in COVID-19 relief, and with historical evidence in mind it stands to reason that these attitudes would be no different in other disasters.

In light of students’ willingness to provide their services and the noted psychosocial advantages to disaster work, we argue that medical students should be given the opportunity to become involved in relief efforts with a goal of increased student resilience and education while aiding overwhelmed systems and resources. If the adverse outcomes that have been highlighted can be mitigated or corrected, students may be able to experience increased resilience and aid their local communities, both in routine work and in likely future disasters. We suggest one approach that may serve to meet these requirements and which utilizes three general parameters: voluntary service, designed disaster education, and pre-operations training.

Medical student service within disaster response should be voluntary in order to mitigate potential coercion or undue stressors, to include a lack of financial compensation, that are of specific concern to a student population, as previously considered.⁹ This would also give students experiencing their own physical and mental health struggles, potential risk factors for negative outcomes, the opportunity to opt out. We suggest that further research could focus on the development of preparatory training materials that include information on the risks and benefits to volunteers, outlines groups at risk of adverse psychological events, and provides information on resources such as mental health counseling and basic signs of psychological distress.

Additionally, medical school curricula should include disaster-related training during which students are educated about the types of disasters, their implications on health care and patient populations, possible personal benefits and risks, and wider societal consequences. If this education occurs over at least 2 days, the median time outlined in Ashcroft et al.’s review,⁸ students should retain a basic understanding

of disasters and the skills that they acquired during training. We also recommend that this training include concepts such as patient triage, emergency medical procedures at the basic life support level, and information on incident command structures. Including these learning objectives may help minimize poor patient outcomes as well as student distress during emergent situations as was noted by student volunteers during the 2005 Kashmir earthquake.⁶

Finally, when a disaster occurs, students who volunteer their efforts could have pre-operations training that identifies the specific situation at hand, discusses the roles that students will fill during their relief work, and describes a likely duration during which students will be involved. By managing expectations in this manner, students will be maximally prepared for distressing scenes common to disasters of all types. Students will also understand their objectives as a member of a team, giving them parameters on when to act and when to look for additional help from resident or staff physicians or other relief personnel.

Medical schools are already uniquely well-positioned to provide emergency education, training, and coordination of highly capable students, and those institutions that do so will be invaluable to their communities during times of duress. We assert that our parameters may decrease the likelihood of the noted psychosocial and other drawbacks that have been previously reported, educate students to be as effective as possible, and maintain the goal of improved student resilience and education. Although the literature on this specific group of healthcare workers is scarce, medical student involvement in disaster relief efforts may provide an opportunity for personal and professional growth and resilience while also providing critical community care. We contend that medical institutions that endorse medical student participation in these endeavors should affirm that it is voluntary, provide adequate disaster training, and inform students of situational factors pertinent to specific disasters as they arise.

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