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## Nepal earthquake 2015: experience of junior clinical year medical students of Patan Academy of Health Sciences

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### ABSTRACT

Dilemmas regarding whether medical students' participation 'as doctor' in disaster response is ethical remains unanswered. Although they prove to be an important addition to the workforce during such settings, their limited competency and likeliness to harm themselves and the patients in the process raises questions. Here we present our views on medical students' involvement in disaster response based on our experiences at Patan Hospital, Patan Academy of Health Sciences (PAHS) during the Nepal earthquake 2015. Medical students play a crucial role in disaster management; however, they are not proficient in care for mass disasters. Nonetheless, being involved offered students first-hand experience on disaster response and also helped the disaster response by providing extra manpower. With more training, medical students can serve as a skillful workforce during disaster. The impact of regular drills strategically placed during medical school training in the curricula can be of immense help to build capacity for medical disaster response.

**Keywords:** disaster response, mass disasters, medical students, Nepal earthquake 2015

## INTRODUCTIONS

On 25<sup>th</sup> April 2015, a 7.8 magnitude earthquake hit Nepal. It was the biggest earthquake since 1934, affecting 35 of the 75 districts of Nepal. It claimed over 8000 lives with 22,309 people reported as injured and an estimated 2.8 million displaced.<sup>1</sup> Throughout the country, 462 health facilities were completely destroyed while 1,159 health facilities and administrative structures as well as cultural heritages were damaged.<sup>1</sup> Disasters with its toll on lives and property, also exert enormous pressure on the medical system. At such times of adversity where there is a limited workforce, medical students form an inseparable yet vulnerable part of the disaster management team.

The article is based on the experience of the authors and includes excerpts taken from reflection writing that was part of the elective posting curriculum.

This article provides perspectives on the experience of the junior clinical year medical students (fourth year medical students) from Patan Hospital, Patan Academy of Health Sciences (PAHS), a tertiary care teaching hospital, located in Lalitpur, one of the worst hit districts in Nepal. The fourth year students from PAHS have been trained in history taking, physical examination, and few clinical procedures on primary care.

**Medical Students in Disaster Response-** In the past, medical students have served a vital role in mass disasters ranging from the Spanish flu pandemic in 1918,<sup>2</sup> 9/11 terrorist attacks in 2001,<sup>3</sup> Kashmir earthquake in 2005<sup>4</sup> to the Chilean earthquake in 2010.<sup>5</sup> During such disasters, students have voluntarily contributed to basic medical procedures such as history taking, physical examinations, placing peripheral lines, suturing, and comforting patients; consequently, serving as a crucial workforce.<sup>3-5</sup>

Nevertheless, medical students form a vulnerable population due to their incomplete training and limited knowledge.<sup>6</sup> Feelings of

inadequacies have been reported by medical students facing disasters in other countries.<sup>4</sup> Furthermore, there is a need to address the physical and psychological difficulties experienced by the students.<sup>7</sup> However, there is scarce evidence on the role of medical students in disaster and its effect on them. This perspective could help identify gaps in the current curriculum and help design more innovative solutions to prepare the medical students in disaster response.

**Medical Curriculum and Disaster Plan-** The total duration of the undergraduate medical course at PAHS is currently 5½ years. The PAHS curriculum introduces disaster management under the Emergency Medicine section where the students are required to have knowledge of and acquire a set of skills which includes: a) Perform triage in a trauma situation, b) describe the principle and process for disaster preparedness, c) take part in the management of a disaster/mass casualty incident, and d) perform initial assessment and stabilization of a trauma patient.<sup>8</sup>

During our medical school course, the first introduction to trauma management was through a Basic Life Support (BLS) and first aid skill training before the first residential rural posting during the introductory block in the first year. During the junior clinical year, the students were oriented to the triage area at PAHS as part of Emergency Medicine posting. The students also had one common lecture on Disaster Management where the students were introduced to the disaster plan of PAHS. A common lecture on polytrauma was also a part of the Surgery curriculum. The students also participated in one disaster drill during the junior clinical year where they acted as victims and media persons. They were introduced to Post Traumatic Stress Disorder (PTSD) as part of psychiatry curriculum. They gained knowledge regarding various emergencies during the 2 and ½ year junior and clinical clerkship and also received firsthand experience in management of emergency cases during the one year of internship. The students also received

Advanced Cardiac Life Support (ACLS), Basic of Developing Healthcare System (DHS) and Sugar Temperature Airway Blood pressure Lab work and Emotional support (STABLE) training as part of the two-week training before starting internship.

The role of medical students in the disaster plan of PAHS is usually that of a volunteer where they are to help only if asked by the Logistic Director and to do as directed: a) contact relatives of victims, b) record and store victims' personal belongings, c) be available to help victims and relatives, listening and answering questions as appropriate, and d) help manage the crowd.<sup>9</sup>

**First Encounter with Mass Disaster-** When the first jolt struck, on Saturday, a weekend, majority of the students were away from the hospital premises; either with their families or in the dormitories. Moments later, an initiation from one of the students in coordination with the Emergency doctor, mobilized all nearby students to the hospital. The Patan Hospital, PAHS, was already flooded with injured patients crying in agony. The hospital staff had their hands full providing first aid and within minutes, the students joined them. The students were busy giving analgesics, pressing gauze pieces against bleeding wounds and transporting patients. Simultaneously, everyone desperately tried to contact their loved ones; praying for their health and safety; most of the time the call was not put through. A white coat was the only thing distinguishing a care giver from those receiving treatment.

Within a few hours of chaos and trying to manage with what little resources were available, the disaster management team at PAHS took control; tents were set up, World Health Organization (WHO) relief boxes were opened, triaging was done and patient care was delivered in a relatively organized way.

Several students who were at home during the time of disaster remarked that their family, fearing their safety, stopped them from travelling to the hospital to help.

Nonetheless, more and more students were available, eager to lend their help during the subsequent days. Lists of available students were made and deputed into different departments at the hospital premises.

Students from different batches initiated fundraisers and actively participated in health camps that were organized in days immediately following the disaster. Teams of Nepalese and international doctors along with medical students were dispatched to various outreach areas. Students were involved in distributing medications and informing victims living in temporary camps about proper sanitation, use of purified water and signs of common diseases to help prevent an outbreak.

**Challenges Faced and Lessons Learnt-** The overwhelming patient flow at the hospital left many working without continuous supervision. The disaster management also involved first and second year medical students, whose only experience of the contact with patients was to take a brief history. One student noted how he was unable to revive two patients despite giving cardiopulmonary resuscitation (CPR) and questioned if he had done it right. Some of the students who were asked by nurses to declare a person dead, questioned their capabilities to do so. Unsupervised medical students in an unsystematic setting like that of mass disasters can in fact harm the patient by exceeding their limits. Evidence of relatively high prevalence of needle stick injuries, stress and psychiatric disorders among medical students are abundant.<sup>6,10</sup>

Also notable is the fact that inexperienced students may panic at the sight of disfigured body, a common occurrence at a disaster management site and instead be a burden on other caregivers.<sup>4</sup> To keep personal emotions under control, and act rationally while witnessing rubble and suffering was a challenge for the students. One of the students reflected how never in his life had he remotely imagined that one day he would confuse whether or not the carotid pulse is

present. Another recalled how he had to carry a dead baby and place him alongside his dead mother in the black triage area. For most of the students, it was their first encounter with death declaration and for many, with death itself.

Despite all the challenges and ethical dilemmas faced by the medical students, they serve an important role in disaster management.<sup>3</sup> One of the teachers noted how the disaster management at PAHS would not have been as efficient as it was, had there not been medical students to provide extra manpower.<sup>11</sup>

In such stressful situations when it is difficult to remember even minor facts; medical care givers are entrusted with life-saving decisions. The disaster helped medical students see this trust and the need of being competent. Helping people in dire need not only brought in tremendous satisfaction but also gave them a glimpse of their future. Disaster management provided the medical students a platform to hone their clinical skills and learn the overall process of disaster management firsthand.

The medical students not only gained clinical knowledge but learned real life lessons that textbooks probably do not teach. In the orthopedics plaster room, a student recalls, "A 12-year-old girl with a fractured tibia was reluctant to be admitted. One of the attendees remarked about how she is a big girl and shouldn't behave so. Her accompanying uncle then said how she has been scared to stay in closed spaces since her mother and aunt died when their house collapsed. That statement brought a cold feeling down my spine. I realized the need to explore the patient's situation as each patient has their own stories". Another student recalls a 73-year-old Chronic Obstructive Pulmonary Disease (COPD) patient who came to the health camp. She showed her broken inhaler but they were unable to provide her a new one. The need to address continuity of care while struggling with providing proper

care for victims of immediate disaster was felt.

The main area of lacking was proper role delegation. The disaster plan only required the students to work as volunteers in aiding patient; however, the surge of 1500 patients<sup>12</sup> during the disaster was overwhelming for solely the hospital staffs present during a holiday to handle. Hence, the mobilized students were providing whatever help possible. There were second year medical students applying plaster slabs whereas senior clinical clerkship students were transporting patients.

**Way Forward-** Individual reflection is important, but a collective response, addressing the system, is necessary if we are to improve health care outcomes in future disasters. The disaster pointed out our strengths and weaknesses. It questioned our preparedness. Moreover, it made us realize that we could do more if disaster preparedness is given the attention it demands.

A short disaster preparedness training course integrated right into the first year curriculum can prepare newly enrolled medical students to handle crisis situation when need arises.<sup>13</sup> In addition, disaster medicine topics should be reviewed across all 5 years of medical school. The impact of regular drills strategically placed during medical training in the curricula can be immense to build capacity for medical disaster response. Participating in the disaster drill that had been organized at PAHS a few months prior to the actual event turned out to be fruitful at the time of disaster. Those of us who were involved even though simply as actors, were better oriented to the concept of triaging and its importance in speeding the initial medical care and reducing human errors. For low income countries where the health system is not sufficiently funded for performing regular drills an alternative could be simulation techniques.<sup>14</sup> Furthermore, assessment of student regarding their knowledge of disaster management as part of

annual exams, can help reinforce and confirm their level of knowledge and skills.

Medical students can provide more service than that has been allocated in the disaster management plan. The importance of medical student as part of the disaster management team is highlighted by the fact that medical students who live in school allocated dormitories can provide immediate assistance when needed, and inadequate staffs are available for e.g. during disaster. An academic year wise role delegation, if practiced in drills can be worthwhile. First and second year medical students can be mobilized in taking vitals, triaging, transporting and counselling patients while the third and fourth year students can help in giving analgesics, tetanus toxoid vaccine, suturing, dressing wounds and monitoring critically ill patients. Final year students and interns can provide assistance in surgeries and apply plaster slabs. Being aware of the roles and limitations while trying to help people; ensures more people are helped, more efficiently and safely. Channeling the passion and enthusiasm of medical students can prove to be invaluable. Also, with own postgraduate (MD/MS) programs, PAHS has additional skilled manpower to mobilize. Hence, it is of paramount importance that every health facility must continuously update their disaster response plan with the ever changing available resources.

In addition to role delegation, there needs to be a proper dissemination of the disaster management plan among students and hospital staffs. Everyone should be aware of each other's limitations, which would prevent incidences like medical students being asked to declare death. An identity tag reflecting the person is a student or a doctor can help in better directing responsibilities. Even though difficult in the disaster situation, we feel that medical students should reveal their identity and inadequacy to perform the task which may be way beyond their capacity and may harm the patients, and possibly themselves as well.

A timely psychological first aid for both medical care givers and patients can help them cope better.<sup>15</sup> Following the earthquake, a presentation was organized by the psychiatry department at PAHS focusing on PTSD. Students who attended, gained a sense of understanding of what they and the patients might be feeling and what signs to look out for in the coming days.

Medical students potentially offer a much-needed supplement to the disaster management process, especially in disaster prone low income countries such as Nepal. Although the medical students' role in disaster management is crucial, there is a room for improvement to make them better equipped to handle mass casualty incidents. Medical students trained with regular disaster drills, disaster management plan and a medical curriculum which incorporates various aspects of disaster management could make a significant improvement in disaster preparedness.

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