Letter to Editor

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The Framework for Teaching Environmental and Occupational Medicine at the Paul Foster School of Medicine (TTHEP); A Policy Brief

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Dear Editor,

Although environmental and occupational diseases are common, and physicians should be acquainted with them, research shows that only a small percentage of US physicians take a proper environmental and occupational history from their patients. The reason can be related to the fact that in US universities' 4-year condensed undergraduate medical school program, limited or no time is allocated to teaching medical students about environmental/occupational diseases [1-5]. This is although new and various occupational and environmental hazards are frequently being introduced into workplaces and environments. Surveys show that in the mid-1990s, only 68% of medical schools in the US taught occupational health in their curricula [2]. Meanwhile, many believe that work-related diseases are underreported by physicians, and the main reason is inadequate training in medical schools [1].

Different universities have followed different methods for teaching Environmental & Occupational Medicine (EOM), and there is a great variation in time allocation, teaching methods, examinations, and involvement of occupational medicine specialists in their curriculum [4]. At the Universite de Montreal, occupational medicine was part of the Community Medicine rotation, and their teaching methods included a 50-page compulsory reading, interactive case-based teaching sessions with faculty members, e-learning with online quizzes, and field activities [1]. At the University of Sheffield in the UK, two one-hour introductory lectures about Occupational Practice and occupational illnesses were done in the first 2 years of medical school, and students could

optionally add five interactive two-hour sessions [3]. In Ghent University, Belgium, a teaching program consisting of 9 hours of traditional lectures in 3rd year, 4 hours of practical education sessions in the 4th year, and several apprenticeship opportunities from 1 week to 2 months in the later years was implemented [4].

The state of Texas, where TTHEP is based, has some of the highest rates of occupational injuries and fatalities in the United States [6], which makes teaching occupational diseases and injuries in medical schools a necessity. At TTHEP this content is offered in different mandatory and optional courses, listed below. TTHEP also uses expertise and/or material from the University of Texas at Houston (UTHouston), The University of Texas at El Paso (UTEP), the Global Consortium on Climate and Health Education (GCCHE), and the Southwest Center of Pediatric Environmental Health (SWCPEH) for teaching its EOM content.

In the Pre-clerkship phase, the SCI (Society, Community, and Individual) unit supervising the EOM teaching holds two mandatory sessions in semester 1. The first session covers the most important routes of hazardous environmental exposures, including air, water, soil, and food pollution. The second session covers one of the significant environmental health issues in West Texas, such as water scarcity, desalination, reclamation, and reusing treated water. A third session is done in semester 4, where 5 vignettes of the most common Occupational or Environmental diseases in Texas are presented. Students work together in small groups and have to comment on the questions they need to ask the patient in their initial interview, the diagnostic tests or imaging needed, the advice they should give to the patient and the treatment plan they want to follow.

More interested students can also take elective courses conducted in the 4th year of medical school. These courses are listed below.

In the 4-week Environmental & Occupational Medicine course, students read about the more common Occupational Diseases, Air and Water pollution, Climate Change, Environmental Sustainability, the US EPA (Environmental Protection Agency), NIOSH (National Institute for Occupational Safety and Health), and OSHA (Occupational Safety and Health Administration). Students must pass an online MCQ exam at the end of each week and participate in a one-day industrial site visit. In these visits, students get to meet health professionals actively practicing in this field, and see the personal protective equipment used in industries. By the end of the course, students write a report about their site visit and an assignment about an important environmental or occupational health hazard in West Texas.

The other 4-week elective course, the Pediatric Environmental Health course, is hosted by the SWCPEH, housed within the TTHEP Department of Emergency Medicine. In this course, students work with SWCPEH faculty, staff, and its network of environmental health experts to review environmental health topics such as lead exposure, indoor and outdoor air quality, allergies and asthma, pesticide use, childhood environmental cancers, mold exposure, drugs of abuse, the effects of prenatal environmental exposures, and the precautionary principles. The elective course includes didactics sessions, online learning modules, pediatric clinic hours, taking calls, participating in simulation cases, field trips to public health organizations, and many other educational opportunities. Students are expected to be able to provide pediatric environmental health education, consultative advice, and referrals to both health professionals and community members dealing with various concerns related to environmental health.

A third fully online 4-week Climate Change and Health elective is also offered at TTHEP. This course uses educational material from the GCCHE and other open resources. In this course, students watch/read 10 videos/articles about the effects of climate change on health designated by the supervisor and meet with the supervisor in person or through online platforms if necessary. The course includes climate-related illness and mortality, agriculture and food security, extreme temperatures and weather hazards, degraded air quality, wildfires, mental health, forced migration, climate litigation, communication, engagement, and advocacy. In addition to 4 MCQ quizzes, students have to write a report on how they will use the information gained from this course in their future career and explain what kind of environmental/social event/activity they would like to get involved in to help decrease the harmful effects of climate change on human health.

Medical schools have used varying teaching methods for their limited occupational medicine curriculum, and it has often been a combination of different methods such didactic sessions, text-based readings, pro forma, worksite visits, case studies, self-learning and active learning, small group discussions, visiting simulated patients or real patients, watching video cases, problem-based learning tutorials, seminars and computer assisted learning [4, 5, 7, 8]; and assessments have varied from MCQs, essay or short answer exams, OSCE examinations, case presentations, and problem solving [8]. Medical education

researchers believe using a combination of different teaching methods can increase medical students' knowledge and interest [5]. Selecting the right method for teaching OEM depends on the interests, experiences, and resources of medical school faculty members and students [4]. We hope the description of this program at TTHEP and other programs conducted in other medical schools, can assist medical educators to find an appropriate way to efficiently fit environmental and occupational medicine teachings in their undergraduate medical curricula.

Conflict of interest: None declared.

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