

Climate Change and Mental Health Curricula: Addressing Barriers to Teaching

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Many calls to action have appeared in recent years for academic physicians to address climate change in clinical practice, administration, research, and educational activities [1–5]. The national dialogue on climate change has intensified, and the daily news frequently mentions natural disasters or plans to combat climate change. Research on the intersection of climate and health has multiplied exponentially, with the number of original studies increasing 11-fold from 2007 to 2020 [6]. A strong evidence base is available on climate change and mental health, forming the core of knowledge around which educators can build curricula [6–9]. Yet there is still a dearth of health professions curricula focused on the impact of climate change on human health in general, and on mental health in particular. Up to 40% of US medical students graduating between 2009 and 2013 reported they had received inadequate education on climate change, and in response, a third of medical schools were planning to incorporate this topic in their curricula [3]. According to one estimate, however, most institutions had not yet done so by 2020 [10]. Similarly, a recent international survey of students from 2817 medical schools located in 112 countries also found that only 15% of schools included climate change and health topics in their curricula [11].

There are several curricular efforts, although few full curricula on climate change in health care settings [10, 12–17]. For example, the University of California, San Francisco, School of Medicine, has included climate health education content in the first-year core curriculum since 2016 [12]. Oregon Health & Science University incorporated climate health education elements into the core medical and nursing

school curriculum in 2020 and launched a 10-week interprofessional course on climate change and human health in January 2021 [13]. A team at Rowan University created an interactive medical student curriculum composed of six 2-hour small group sessions, culminating with the development of an infographic and podcast [14]. Recently, a strategy was outlined for integrating climate health education content into the existing curriculum at Cleveland Clinic Lerner College of Medicine [15]. The *New England Journal of Medicine* has published a modular curriculum that can be adapted for local use [18]. There are proposals for core objectives for sustainable health care education, as well as a comprehensive graduate medical education framework on climate change, including learning objectives, teaching strategies, and suggested assessment methods [19–21]. Yet, published examples of curricula are few, let alone those focused on mental health. Moreover, we know very little about how well, if at all, curricula met their specific goals and objectives.

In this editorial, therefore, one of our goals is to identify possible barriers to curricula design and teaching as a first step to overcoming this gap. The barriers we outline below are cognitive bias, climate-related anxiety, lack of facility with climate science methods and findings, lack of local experts, insufficient curriculum space, insufficient resources, and lack of evaluation data. A second goal is to propose solutions so that psychiatrists will be better able to advocate for, plan, and effectively implement climate change and mental health curricula. An overall goal is for our profession to become better informed about how to protect patients and the wider public from climate adversities and to better manage their responses to those adversities.

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Cognitive Bias

George Marshall, an environmentalist and climate change communication expert, postulated that people may not view the climate crisis as impending because of its

magnitude. People may defend against the associated anxiety by creating an artificial timeline. He wrote that “the lack of a definite beginning, end, or deadline requires that we create our own timeline. Not surprisingly, we do so in ways that remove our compulsion to act... We make it just current enough to accept that we need to do something about it but put it just too far in the future to require immediate action” ([22], pp. 63, 64).

This cognitive bias can be an important barrier to action [23]. It is tempting to create a sense of urgency by using stories and images that depict tragic consequences of natural disasters. But climate change communication experts warn that excessive imagery can increase distress and achieve the opposite effect, numbing the audience [24]. In lectures, it might be helpful to use case vignettes that can anchor the topic and personalize the devastating consequences of climate change. Educators could encourage the audience to think of a patient or someone else they know who has been affected by weather-related disasters, so the challenge becomes less abstract, yet not overwhelming. It can be helpful to focus on one’s family or local community rather than thinking about the entire planet at once. Educators are encouraged to imagine the desired future for their families and communities and then plan actions that can be taken now to move toward that future [25]. And finally, setting a deadline for starting to work on the envisioned curriculum will help set things in motion (e.g., by performing a needs assessment).

Climate-Related Anxiety

Climate-related anxiety, also known as eco-anxiety or eco-distress, was defined by the American Psychological Association as “the chronic fear of environmental cataclysm that comes from observing the seemingly irrevocable impact of climate change and the associated concern for one’s future and that of next generations” [26]. Climate anxiety can be paralyzing and lead to helplessness [27–29]. More importantly, if individuals or communities do not believe they have the agency to act and to bring about change, they may be overpowered by hopelessness [30]. A resignation to the destructive forces of climate change or helplessness leads to inaction, fueling a vicious cycle of passivity, inertia, and despair, which may translate into inaction in developing curricula and in teaching, or even cause a loss of motivation to learn about the issues at stake.

In response, we propose that it will be important to develop teams of like-minded individuals in countering the possibility of passivity, inertia, and despair. Teaming up can facilitate action and add to the fun of the work, including curriculum planning, design, and implementation. Moreover, when getting stuck, it is helpful to pass

the task on to others for a fresh perspective. It might be helpful to find out if members of the same institution belong to a climate and health newsletter listserv, working group, or task force [5]. One possible small starting point is to propose a grand rounds lecture on the subject area for the department. Acting and achieving small gains should counter the anxiety, at least partially so. Nurturing skills and developing knowledge can also increase the confidence to act and move learners and educators beyond despair to engagement [31].

Lack of Facility with Climate Science Methods and Findings

An overwhelming number of publications are available on climate change. A brief PubMed search yielded 69,119 articles on climate change and 659 articles on climate change and mental health. How then are educators going to sort the wheat from the chaff? A related issue is that many of the scientific papers are in journals to which psychiatrists do not routinely subscribe. And many of the scientific papers employ methods that are not easily understood, or that are even impenetrable to some, given the structure of medical and psychiatric training. Psychiatrists are well versed in research designs such as randomized controlled trials and cohort and case control studies, but these are not the methods ordinarily employed by climate scientists and in articles published in *Science* or *Nature*. Nor is our profession skilled in the critical appraisal of those methods.

There are two key responses to these concerns. The first is to develop or utilize existing banks of course materials, syllabi, lesson plans, and learning modules [32]. Notable examples include the Global Consortium on Climate and Health Education repository [33] and the National Institute of Environmental Health Sciences Climate Change and Human Health Portal, a curated database of peer-reviewed research and gray papers [34]. A second response is to develop international and national experts in the profession who can advise about what to learn and teach [35]. Such development will require opening pathways for medical students, residents, and fellows to specialize in these areas by providing electives and formal training programs in collaboration with other disciplines, including public health, epidemiology, meteorology, and climate science. At the time of writing, we are not aware of any such formal training programs specifically involving members of the psychiatric profession. Accordingly, these training programs should teach about the methods employed by climate scientists so that psychiatrists can speak and teach with authority about the related scientific methods and findings.

Lack of Local Experts

Although an established body of knowledge exists on climate and health in general, there are few mental health experts. This is one of the rare areas where educators have to learn a new topic at the same time as they are teaching it [36]. Understandably, psychiatric educators may experience impostor phenomenon feelings and feel ill-prepared to teach about climate health education topics. It will help to remember that lifelong learning is an important aspect of medical practice. Autoimmune encephalitis and COVID-19 are just two examples of entities that were completely unknown when many of the currently practicing psychiatrists were in training.

To overcome this barrier, we propose using existing materials, such as the *New England Journal of Medicine* mental health module [18] or the repositories mentioned earlier [33, 34]. Developing interdisciplinary collaborations will help, not only by reducing feelings of isolation, but also because the science of climate change is not siloed. Psychiatrists can learn a lot from colleagues in other disciplines, writers, or environmental activists. Reaching out to peers at other institutions who have already developed curricula may help both parties, because curriculum dissemination is an indicator of academic success, which many will be happy to share. Even though learning resources and assessment strategies [21] have been assembled and experts have suggested “tips for teaching environmental sustainability to health professionals” [37], there are few formal faculty development programs [36]. More such efforts are urgently needed, as the recent Association for Medical Education in Europe consensus paper noted [38].

Insufficient Curriculum Space

Insufficient curriculum space is a universal challenge encountered when new topics are introduced in the curriculum. Psychiatric educators can consider several creative strategies, including inserting lectures into the existing didactic footprint [12, 13, 15], using flipped classroom models based on existing or newly developed online modules, capitalizing on existing curricula (e.g., disaster psychiatry, psychopharmacology, advocacy and leadership, and diversity, equity, and inclusion [15, 36]), and proposing elective experiences for medical students, residents, and fellows to develop quality improvement projects to highlight sustainability principles or community-based projects that increase community resilience. Another strategy is to ask each lecturer or grand rounds presenter to include one teaching point on the impact of climate change, as relevant to their topic. This incremental approach to change may be more feasible and acceptable and promote buy-in [5]. As with any other innovative effort, it will be important to enlist the support of departmental leadership and trainees.

Insufficient Resources

Having insufficient resources is another universal challenge, one with which academic physicians are all too familiar. Several suggested strategies include involving trainees in educational efforts in exchange for academic credit, applying for grant funding and philanthropic support, and, as mentioned above, reaching out for departmental and institutional leadership support. Academic health centers typically place resources in areas that need to be boosted to become compliant with extant policies and legislation. As such, knowledge of relevant policies and professional standards, such as the American Psychiatric Association Position Statement on Mental Health and Climate Change [39] or best practices at similar institutions will help psychiatrists advocate for resources to support their curriculum development work.

Lack of Evaluation Data

With fledgling climate and mental health curricula, evaluation data are lagging. Scholars have proposed competencies for different medical training levels as well as learner assessment strategies [17, 21, 33, 38, 40]. Climate health education case vignettes have been used in medical student objective structured clinical exercises [41]. Even though health professions educators use indicators to measure the quality of education at all levels (course, program, learners, faculty, institution, country), few indicators are currently established for climate health education [38, 42]. According to The *Lancet* Countdown, the indicator “Inclusion of health and climate change within medical and public health curricula” should be reported on an annual basis [43]. However, finding an appropriate method to measure this indicator has proven challenging [42].

Faculty may wish to consult educational evaluation experts at their institution prior to implementing curricular changes (if this resource is available). Advocating for inclusion of climate health education questions in student shelf exams, US Medical Licensing Exams, and American Board of Psychiatry and Neurology (ABPN) certification exams will help underscore the importance of this content. Articles on climate and mental health topics can be included in the banks used for the ABPN article-based continuing certification path, which commenced in January 2022 [44]. Finally, adding requirements related to climate health education to institutional and graduate medical education program accreditation processes can also provide incentives for curricular reform [42].

Discussion

In this editorial, we have identified several barriers to the development of mental health curricula, and we have

proposed how they may be overcome. We hope that readers who have already developed educational materials will reach out and share their experiences. Lessons learned may help others develop programs or adapt existing materials for use at their institutions. Developing a collective wisdom is needed to help move to a near future where all academic institutions and mental health training programs have curricula on climate change with evidence supporting their specific educational goals and objectives.

Developing new curricula on climate change and mental health will require determination, humility, admitting ignorance, mastering new content, and stepping outside one's comfort zone daily. Sadly, an optimal comfort zone no longer exists in many parts of the world, between natural disasters, heat-related adverse effects, and exacerbation of health care inequities due to climate change. Climate change is already a strongly influential factor on human health and welfare. This is urgent work. Yet, medical educators have not been proactive or barely even reactive in developing climate health teaching, as demonstrated by the evident lack of curricula. Psychiatrists need to take action by learning about climate change and its ramifications for the public health, including how to prevent and effectively respond to these impacts, and by educating trainees.

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