A Single Institution Study: Integrating Evidence Based Climate Health Curricular Topics

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Background and Introduction

- World Health Organization estimates that climate change will cause an additional 250,000 deaths annually.1
- US healthcare system is responsible for 25% of all global healthcare greenhouse gas emissions.2
- Educating medical students on the imminent health risks associated with a warming planet is essential to producing future physicians who will manage these patients’ concerns.
- Majority of medical students believe climate change should be a core topic in medical school curricula and current coverage is inadequate.3
- Many U.S. medical schools have started to integrate climate health into their curricula.4

Our goal is to assess student awareness of climate health curriculum at Robert Wood Johnson Medical School (RWJMS) and to integrate evidence-based interventions across topics such as pathophysiology, social determinants of health, and health systems science.

Methods and Materials

- We conducted a needs assessment prior to developing a climate health curriculum.
  - Two surveys were administered: one to first-year MS, and one to a small subset of fourth-year MS at RWJMS
  - 30 first-years and 13 fourth-year students responded.
- To develop a climate health curriculum:
  - Resources from Columbia University’s Global Consortium on Climate Health and Education (GCCHE), the University of New Mexico’s Climate Health ECHO Project, and the U.S. Global Change Research Program’s 2016 report titled “The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment”
  - Generated an inventory for where specific climate health interventions could be incorporated into the RWJMS preclinical curriculum (ie. required reading, dedicated lecture slides, or module-based learning).
  - Our team then began reaching out to course directors to methodically integrate climate health.

Results and Curriculum Schematic

Figure 1: Results from questions in the RWJMS first-year medical student survey

<table>
<thead>
<tr>
<th>Question</th>
<th>100% of sampled 4th year MS answered:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Does your medical school curriculum address the relationship between extreme temperature health risks and climate change</td>
<td>No, this topic was not covered</td>
</tr>
<tr>
<td>1.11 Does your medical school curriculum address the carbon footprint of healthcare</td>
<td>No, this topic was not covered</td>
</tr>
<tr>
<td>1.12 In training for patient encounters, does your medical schools’ curriculum introduce strategies to have conversations with patients about the health effects of climate change?</td>
<td>No, this topic was not covered</td>
</tr>
</tbody>
</table>

Table: Curricular Topics

<table>
<thead>
<tr>
<th>Course</th>
<th>Curricular Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicianship</td>
<td>Population Health, Health Equity &amp; Disparities, Health Systems Science</td>
</tr>
<tr>
<td>Foundations of Medical Sciences</td>
<td>Immunology, Microbiology, New York Academy of Medicine</td>
</tr>
<tr>
<td>Integrated Systems 1</td>
<td>Cardiology, Pulmonology, Nephrology, New York Academy of Medicine</td>
</tr>
<tr>
<td>Integrated Systems 2</td>
<td>Metabolism and Gastroenterology, Endocrine and Reproductive Systems</td>
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</tbody>
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Evidence-Based Interventions

- Introduction to Climate Health
- Climate change, urban heat environment disparities, tree equity, and disproportionate occupational exposure, how urban planning of built environment impacts health outcomes
- Environmental impact, waste production, and greenhouse gas emissions from healthcare systems and hospitals
- Climate change and increased incidence of autoimmunity
- Increase in atopic conditions due to rising temperatures, air pollution, and the lengthening of pollen season
- Geographic changes in vector borne illnesses such as Lyme, Yellow Fever, West Nile, and Zika
- Geographic changes in spore-borne diseases in dry arid climates

Discussion and Future Directions

Given the implications of climate change on human health, it is essential for current medical students to be educated on the interaction between climate and health. Future physicians must be taught about the impact that the healthcare system has on the environment, and how we can make sustainable choices on both a systems and individual level in order to decrease the burden of climate change on health. Future initiatives include:

1. Introduction to Climate Health Inaugural Lecture titled “What do physicians need to know about climate health?”
2. Formal Establishment of an Environmental Health Curriculum with oversight from a faculty director and using insights gained from our 2022-2023 Planetary Health Report Card
3. Community Health Education Collaborations (CHEC) to offer community level discussions about local impacts of climate change on health
4. Non-Credit Elective involving guest lecturers from other fields related to climate, sustainability, health equity, and environmental justice
5. Distinction in Environmental Healthcare for students who wish to complete a scholarly project and receive notation on their transcript
6. Review Progress with the continued use of the Planetary Health Report Card to determine the school’s year to year development and areas for further improvement

References


Acknowledgements

Special thanks to the preclinical faculty at RWJMS!