Evaluating the Impact of Climate Curriculum in Undergraduate Medical Education

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Background

- There is a gap in medical school curricula on the relationship between health outcomes and climate change.
- In its 2022 evaluation, Georgetown University School of Medicine (GUSOM) received a grade of C.
- This leaves medical students underprepared to address the needs of their patients who experience health complications related to environmental hazards.

Objectives

- Our project aims to address this gap in education and evaluate the effectiveness of integrating a novel single-session course into the medical school curriculum.

Methods

- A one-hour interactive online course was delivered to medical students as part of a mandatory session.
- A 9-question Likert scale (1-5) questionnaire regarding knowledge of climate health scenarios was administered to students before and after the course.

Results

Course Design

- Part 1: lecture-style presentation delivered by physician knowledgeable in climate health
- Part 2: clinical vignettes of climate health scenarios in small-group breakout sessions
- Part 3: large-group discussion facilitated by authors to talk through vignettes
- Presentation and vignettes were adapted from Columbia University's Climate Resources for Health Education

Table 1: Summary of demographics of matched 247 pre- and post-intervention participants

Category	Responses	Overall (N(%))
Age (mean (SD))		25.7 (2.6)
Sex	Female	156 (63.2)
	Male	85 (34.4)
	Non-binary	1 (0.4)
	Unknown	5 (2.0)
Race	African American	27 (10.9)
	Asian	112 (45.3)
	Multiracial	9 (3.6)
	Other	1 (0.4)
	Unknown	9 (3.6)
	White	68 (27.5)
	White Hispanic	21 (8.5)

Table 2: Nine survey questions were asked to students before and after the climate course. Statistically significant increases were observed in eight of the nine survey items ($p < 0.05$), with seven demonstrating highly significant improvement ($p < 0.001$) and one showing moderate significance ($p = 0.014$).

	Question	p-value
1	Climate change is real and presents danger to our environment in the next 100 years and beyond.	0.55
2	The effects of climate change can manifest differently based on socio-economic and geographic status.	0.014*
3	I can name at least two groups at higher risk of health impacts from climate change.	<0.001*
4	I understand how climate change can impact the health of my patients.	<0.001*
5	I can name at least two ways climate change can impact the health of patients.	<0.001*
6	I can identify both the local community and higher state interventions for climate change that can contribute to my patient's risk of impact on their health.	<0.001*
7	I feel comfortable screening my patients to identify who may be at higher risk of climate change impacts.	<0.001*
8	I feel comfortable talking with my patients about how their health conditions may be affected by the changing climate.	<0.001*
9	I have resources and references I can give to my patients to help them navigate their health conditions with our changing climate.	<0.001*

Conclusions

- These findings demonstrate that the workshop led to measurable gains in climate change knowledge and confidence.
- We believe a key strength of the course lies in its use of interactive clinical vignettes, which allowed students to immediately apply newly learned concepts and envision themselves in the role of a healthcare provider.

Limitations

- This study surveyed students at a single institution and data from two cohorts of students.
- Additionally, long-term retention of climate health knowledge was not assessed.
- Though these isolated classes represent important initial steps, a longitudinal curriculum is needed for a comprehensive education.