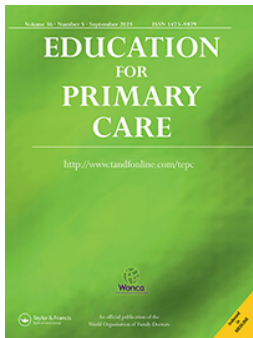


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The Planetary Health Report Card: evaluation of the integration of principles of sustainable healthcare into a new graduate entry medical programme

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ABSTRACT

Nationally and internationally, medical students have a strong track record of engagement with sustainability and sustainable healthcare, notably through the development and implementation of the student-led international Planetary Health Report Card initiative. The Medical Schools Council has endorsed a specific curriculum statement for integration of aspects of sustainable healthcare into undergraduate teaching and the General Medical Council has included the topic in Outcomes for Graduates. The Three Counties Medical School (TCMS) is a new medical school admitting its inaugural cohort in September 2023, and we are committed to supporting the development of doctors who are socially responsible, global citizens. We used the Planetary Health Report Card (PHRC) to complete the first loop of an evaluation of the new TCMS MBChB degree programme. Generally, the PHRC is used by medical schools around the world to score, and ultimately rank, performance in integrating aspects of sustainability in health into teaching and learning. We used the PHRC to help evaluate our curriculum planning to date and in so doing highlighted areas we might not otherwise have considered. This project was part of the University of Worcester Green Impact Project scheme, which funded a student-assessor (a GIPA) to participate with us in evaluating our progress, seek out gaps and use the tool to plan the next steps in curriculum design.

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Education for sustainable healthcare; curriculum; co-creation; undergraduate; evaluation

Introduction

This year, 2025, is the tenth anniversary of the term ‘planetary health’ being coined in the Lancet Commission on Planetary Health [1]. The definition, ‘the health of human civilisation and the state of the natural systems on which it depends’, emphasises how interlinked issues that affect the health of the planet are with the health of citizens. This is a bidirectional effect with human actions affecting the planet and changes in the Earth’s ecosystems affecting human health. Of particular note is that the United Kingdom’s National Health Service is responsible for around 4% of the UK’s total carbon emissions and approximately 40% of public sector emissions in England. In October 2020, the NHS became the first healthcare system in the world to commit to net zero emissions, by 2040 [2]. Timed to coincide with the anniversary of the original Lancet Commission, a new commentary has been published that makes the importance of this relationship clear: planetary health is not just an environmental issue, it is a foundational societal concern and addressing it will require systemic transformation across governance, education, business, and public health [3].

Primary care in the UK is increasingly recognised as a strategic lever for advancing planetary health. Through curriculum reform, clinical practice changes, and systemic advocacy as well as being the site of the majority of healthcare delivery and prescribing decisions, GPs are positioned to lead the transition towards a more sustainable and equitable healthcare system. The Royal College of General Practitioners (RCGP) has embedded planetary health into the UK GP postgraduate training curriculum for resident doctors [4]. This includes understanding how planetary degradation affects patient health, recognising how clinical decisions impact the environment and applying principles of sustainable clinical practice: prevention, patient empowerment, lean pathways, and low-carbon treatment.

Medical students have a strong track record of engagement with planetary health, sustainability and sustainable healthcare. The literature includes a review in 2020, by medical students, of 2817 medical school curricula across 100 countries, which found only 15% of medical schools had included the health effects of

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climate change in the curriculum [5]. The authors pointed to statistics that suggest:

The healthcare sector, which aims to protect and promote health, is a significant global producer of greenhouse gases, contributing approximately 4.4% of global net emissions, the equivalent to two gigatons of carbon dioxide.

The student-authors further said:

With deteriorating ecosystems, the health of mankind is at risk. Future healthcare professionals must be trained to recognize the interdependence of health and ecosystems to address the needs of their patients and communities.

These students, as future doctors, recognised the importance of social accountability as an integral part of their undergraduate education. In 2022, United Kingdom medical students sent an open letter to the General Medical Council (GMC) requesting the inclusion of climate change and planetary health outcomes in the undergraduate medical curriculum [6].

The role of healthcare professionals in promoting public health is not new, but the potential interaction of health and climate change is significant because of a potential triple impact [7]. Firstly, health is a contributing site for greenhouse gas production (prescription of inhalers and use of anaesthetic gases in particular.) Secondly, health care workers will be at the forefront of dealing with the social and health challenges which have variously been described to include respiratory and cardiac problems due to air pollution, as well as 'poverty, starvation, the resurgence of previously managed infectious diseases, mass dispossession of populations, and increasing cancers due to carcinogenic pollutants' [7]. Finally, health systems themselves risk disruption by extreme events that might be provoked by a climate crisis or environmental disaster, challenging their capacity to deliver services at critical times.

Since 2018 the GMC has included sustainable healthcare under health promotion and illness prevention in Outcomes for Graduates, outcome 25 [8].

25: Newly qualified doctors must be able to apply the principles, methods and knowledge of population health and the improvement of health and sustainable healthcare to medical practice (GMC 2018, p23).

The International Association for Health Professions Education (AMEE) added emphasis to the obligations on healthcare teaching faculty. In 2021, an AMEE consensus statement on planetary health and education for sustainable healthcare laid out a shared purpose by and for healthcare educators [9]. The aim was:

To provide ... an inclusive vision for educating an interprofessional healthcare workforce that can deliver sustainable healthcare and promote planetary health. It is intended to inform national and global accreditation standards, planning and action at the institutional level as well as highlight the role of individuals in transforming health professions education.

In 2022, the Medical Schools Council endorsed a curriculum developed to support the delivery of outcome 25 of Outcomes for Graduates [10]. The content map of the end-point Medical Licensing Assessment aligns with the knowledge, professional capabilities and values required to develop doctors fit to integrate sustainability into good medical practice. This includes leadership and communication skills to promote organisational change and talk to patients about planetary health.

The Three Counties Medical School is a graduate entry, four-year, condensed course. The curriculum includes early (from week three of year one) frequent, clinical exposure and a longitudinal integrated clerkship (LIC) in year three, for all students. The LIC will see our students 'embedded' into primary care, based in two GP practices for a total of 36 weeks. The literature suggests that a LIC can lead to authentic relationships with both patients and educational supervisors and can lead to an increased sense of patient-care 'ownership' and responsibility [11]. Students in this qualitative examination became patient advocates. Living and working in the primary care community alongside patients supported a shaping of students' social consciences [11]. During their LIC, there will be opportunities both for our medical students to be influenced by community initiatives around sustainability and also to influence the emphasis on sustainable healthcare in the community. We want to capitalise on their interests and guide them in their development as planetary health advocates.

The tool we used for our curriculum evaluation was the Planetary Health Report Card. This is a student-led project which has grown to include 15 countries and over 105 medical schools [12]. Currently, around half of the medical schools in England use the PHRC to self-assess in five areas: curriculum, interdisciplinary research, community outreach and advocacy, support for student lead initiatives and campus sustainability. This report card is now used by a range of healthcare disciplines to evaluate and rank undergraduate curricula in schools that have graduated at least one cohort. We sought permission to use the format of the report card to evaluate our planned curriculum, specifically with a view to using it to contribute to the ongoing curriculum development in our new graduate entry MBChB programme.

As a new medical school, we seek student feedback at all stages to refine and develop our curriculum. For this project, we sought to employ students as academic partners to further develop their leadership and advocacy skills. Faculty acting on feedback enables students to be co-creators of the curriculum, which also aligned with the first of five key components to deliver the vision of the University of Worcester learning and teaching strategy [13].

Aims

We sought to harness the enthusiasm and energy of our medical student body with the support of a GIPA (Green Impact Project Assistant):

- (1) To involve and educate fellow students on aspects of sustainable healthcare
- (2) To devise a project which:
 - raises awareness on campus and beyond of the importance of sustainable healthcare
 - increases the social accountability of the Three Counties Medical School
- (3) To evaluate and ensure dissemination of the project outcomes

Methods

This evaluation involved reviewing curriculum documents, teaching resources and assessments for the medical degree, and also elements of the University strategic approach and campus infrastructure.

In 2023, the curricular elements started during induction week with a series of sessions run by visitors from the local NHS and local authority environmental health departments. Topics covered included anaesthetic gases, personal protective equipment PPE, inhaler usage, transport, air quality, recycling surgical instruments and disposal of water-soluble medications. Students also engaged with university-wide initiatives such as carbon literacy training and the Recycling, Re-using and Repair guide.

The MBChB curriculum is problem-based and devised as a series of learning weeks with materials, podcasts and annotated reading lists presented in a virtual learning environment. The United Nations Sustainable Development Goals (SDGs) [14], with their attendant further reading, are flagged up throughout the curriculum in relevant weeks. For example, in respiratory week with its focus on chronic obstructive pulmonary disease, we placed SDG [11] *Make cities and human settlements inclusive, safe, resilient and sustainable*, which includes target 11.6:

Box1: Student-selected topics on sustainability in healthcare

Tobacco Control and Sustainable Development Goals: Balancing Environment, Economics and Equity
 The Use of Recycled Plastic to Create Prosthetic limbs in Low-Income Countries
 We need to talk about periods
 Clearing the Air: Sustainable Inhaler Practices in COPD and Asthma Care
 Desflurane: assessing its impact and searching for a replacement
 Air Quality; the health, climate and sustainability emergency
 Ripple Effect: The Hidden Hazard of Pharmaceuticals in Water Supplies
 Making PPE Safe for the Environment.

By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality.

Early in semester one, the first MBChB summative assessment is a student-selected component related to sustainable healthcare or planetary health. Students are required to work in groups and create a poster and a presentation. Some of the topics chosen in year one are listed in box 1.

These varied materials were evaluated against the 51 questions in the five PHRC criteria, and a self-assessment was followed by a recommendation in each PHRC domain.

Results

The Three Counties Medical School sits in the context of the University of Worcester that already sets an award-winning tone for cross-campus sustainability. The PHRC recognises the importance of institutional support for medical schools by including an institutional-level evaluation.

The students carrying out the PHRC-led evaluation identified that the University of Worcester is working on a European Union funded campus sustainable mobility project with an agreed action plan to help decarbonise travel. The university has invested in the largest one-site number of electric car charging points in Europe. In addition, the Sustainable Research interdisciplinary research group has strengthened the capacity for effective research collaboration and includes aspects such as a designated Green Impact Laboratory Chief Technician. For over a decade the university has had a sustainable procurement group, including student and academic members, to focus on ethical procurement issues including, for example, campus catering and

workers' rights and environmental impact in the supply chain.

The PHRC also asks about investments, for example, the University of Worcester has no investments in extractor fossil fuel companies.

Planetary health score card summary

A summary of the evaluation outcomes under the five domains of the PHRC and self-assessment grade is given in Table 1.

Conclusions

Using the PHRC as a tool to evaluate both our curriculum and the wider university context has identified recommendations that we will aim to implement as the curriculum rolls out over the rest of our four-year degree. It has raised awareness of university-wide initiatives and opportunities for medical students' involvement. The PHRC is widely available to all institutions for evaluation of their curricula, and this project has shown its utility to assist in curriculum design and development. It is too early to show the impact of our curriculum design decisions but we anticipate repeated iterations will be able to.

Other outcomes have included a development in student advocacy, and the project has initiated an authentic set of skills, including project leadership and quality improvement awareness and professional values through sustainability-awareness.

It is of note that in the 2023 Green Gown Awards, UoW was Highly Commended in the 'Reporting with Influence' category, which assesses how sustainability initiatives are reported [15]. The PHRC builds directly on that success with principles of transparent data collection and analysis and has raised awareness throughout our student body which we will also share with practice partners.

The integration of the Planetary Health Report Card into curriculum evaluation at the Three Counties Medical School has shown us the extent to which we have opportunities for a forward-thinking approach to embedding sustainability within medical education. Our curriculum not only aligns with national and international calls for climate-conscious healthcare training but also reinforces the strategic role of primary care in advancing planetary health. With its emphasis on community-based learning through longitudinal integrated clerkships, the TCMS programme situates students within the very settings where sustainable healthcare practices can be most

Table 1. Summary of TCMS PHRC outcomes.

Curriculum	C+
	<ul style="list-style-type: none"> The Three Counties Medical School has included aspects of planetary health in the curriculum including in assessment. The inclusion of a poster and presentation on sustainable healthcare as the first summative assessment is a highlight. Integrating the United Nations Sustainability Goals across the whole of phase one (years 1 and 2) has raised awareness in the student body and faculty. Recommendations: Planning conversations with patients about the health effects of climate change and impact of health decision making on planetary health, such as inhaler selection, have not started. This is something to develop as students move out into the community in the third year longitudinal integrated clerkship
Interdisciplinary Research	C
	<ul style="list-style-type: none"> As a new medical school, TCMS has not yet developed a research presence in planetary health and sustainability. However, the aspiration to publish this evaluation in itself could stimulate ideas and generate collaborations. The University has an active biodiversity research group, contributing to local and global efforts to address the biodiversity crisis including UK Research Councils (BBSRC & NERC) funded pollen and climate change research. This collaborative group offers medical student opportunities through research and voluntary activities. Recommendations: Consider supporting the student society 'MedSoc' to join the Planetary Health Alliance or the Global Consortium on Climate and Health Education for networking opportunities, sharing of best practice and stimulation of research ideas.
Community Outreach and Advocacy	B+
	<ul style="list-style-type: none"> Some of our primary care practice partners exhibit strong green advocacy. Alton Street Surgery, Ross on Wye emphasises sustainable, de-medicalised healthcare through community development and will provide longitudinal integrated clerkships in our third year. Students and faculty participated in the 'Ben to Ben: Running out of Time' relay event used to promote national community discussion about climate change in the summer of 2024. Recommendations: Develop further links to community engagement initiatives for student-selected components and LOCS (Learning Opportunities in the Clinical Setting). Consider using the Public Engagement lecture series to promote awareness of aspects of sustainable healthcare.
Support for Student-Led Initiatives	B -
	<ul style="list-style-type: none"> The University of Worcester supports student groups dedicated to planetary health. The Green Impact Project Assistant scheme and the Students as Academic Partners scheme both selected TCMS projects for funding. The Student Union Allotment Society is supported. Recommendations: As the medical student body grows, TCMS should continue to promote and support opportunities to engage across campus and with other medical schools
Campus Sustainability	A
	<ul style="list-style-type: none"> The University of Worcester is an award-winning sustainable campus supported among other grants by the Natural Networks Programme (a partnership between Worcestershire County Council and the Worcestershire Wildlife Trust funded by the European Regional Development Fund). The new Medical School building was a recycled building and the refurbishment maintained 70% of the embodied carbon of the original printing house and uses inert copper alloy cladding to enhance energy use. It achieved a Gold 'SKA' award from the Royal Institute of Chartered Surveyors, a rating system specifically tailored for assessing sustainability and environmental performance. Recommendations: As a rural medical school, students can travel long distances to placement, that are often inaccessible by public transport. The School should continue to work towards a transport solution such as minibus shuttles in collaboration with other health students such as nurses. For the 2025 admissions cycle, TCMS should move to holding all selection interviews on-line to minimise costs to applicants and impact from travel.

impactful. By fostering student advocacy, interprofessional collaboration, and curriculum co-creation, this initiative contributes to a broader cultural shift – one that positions students in primary care as a cornerstone of both clinical excellence and environmental stewardship. As future doctors engage with planetary health from the outset of their training, we hope they are empowered to lead systemic change that benefits patients, communities, and the planet.

Author contributions

CRediT: **K Mohanna:** Conceptualization, Supervision, Writing – original draft, Writing – review & editing; **R Murshed:** Investigation; **K Boom:** Project administration, Supervision.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Ethics approval

Ethics approval was not sought as this curriculum evaluation is part of routine academic practice. The innovation we present here is the use of the PHRC to aid annual programme evaluation. No individual student data was accessed or reviewed for the evaluation.

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