

In this article...

- The relationship between health, healthcare practice and the climate crisis
- A study comparing student nurses' attitudes to sustainability in 2014 and 2019
- How sustainability can be embedded in the curriculum and the further research that is needed

The Greta Thunberg effect: student nurses' attitudes to the climate crisis

Key points

The climate crisis causes risks to health and healthcare practice worldwide

There are calls for the nursing profession to address the climate crisis through education and leadership

A study compared the attitudes of student nurses towards sustainability in both 2014 and 2019

More students in 2019 felt the climate crisis and sustainability were important topics for nursing, and should be included in the curriculum

Sustainability topics can be integrated into the curriculum, but more research is needed to determine how this should be done

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Abstract The risks of the climate crisis and environmental damage have recently been highlighted in the media – for example, through the actions of climate activist Greta Thunberg. The negative impacts of the climate crisis on health and healthcare are well documented, with reports of unacceptable levels of risk for the health of populations worldwide. We compared the attitudes towards sustainability and the climate crisis of student nurses starting a nursing degree in 2019 with those from 2014. Study results showed that the 2019 students were more likely to agree that the climate crisis and sustainability are important topics in nursing and should be included in the curriculum. We suggest how this can be achieved and highlight future research needs.

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Over the past few years the general public has been exposed to much information on the climate crisis through television programmes such as *Blue Planet II*, which aired in 2017 and highlighted the damage caused to the environment by the use and disposal of plastics. Another significant factor in drawing public attention to the climate crisis was climate activist Greta Thunberg who, as reported by Carrington (2018), started raising awareness of concerns about the environment by sitting in protest outside the Swedish parliament building when she was still a child at school. This very quickly led to a huge following and the development of the school strike movement. Thunberg's passionate and clear delivery of the climate issues at the 2018 United Nations Climate Change Conference drew further attention to the crisis and attracted significant media attention (Carrington, 2018).

The climate crisis and environmental damage cannot be ignored by health

professionals. The impacts of the crisis on health and healthcare are well documented, with reports of unacceptable levels of risk for the health of populations worldwide. Watts et al (2018) reported that adaptation and mitigation will potentially overwhelm healthcare systems and suggested widespread understanding of the climate crisis as a public-health issue will be crucial to delivering a response to the challenges. Meanwhile, the World Bank (2017) highlighted the limits of the earth's resources, as well as the significant adverse impacts of healthcare delivery on the environment.

These assertions have been supported by other studies: healthcare delivery contributes to the climate crisis and, thus, adverse health outcomes, through significant greenhouse-gas emissions, the use of toxic materials and the production of vast amounts of waste (Gibbs et al, 2017; Richardson et al, 2016). This is likely to be exacerbated by the coronavirus pandemic, due to the increased use and disposal of personal protective equipment (PPE), which

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needs to be treated as clinical waste and, therefore, incinerated.

Climate crisis and student nurse education

Unsurprisingly, there are calls for the nursing profession to address the climate crisis through education (Leffers et al, 2017) and leadership (International Council of Nurses, 2018). The ICN's (2018) position statement emphasises the need for "nurses to take immediate action to build climate-resilient health systems". Nurses need to work more sustainably to deal with the mitigation and adaptation challenges presented by the climate crisis, and the possible depletion of scarce natural materials (Grose and Richardson, 2013a; Grose and Richardson, 2013b).

It has been highlighted that student nurses are poorly prepared to understand the connections between resources, the climate crisis, sustainability and health (Lopez-Medina et al, 2019; Barna et al, 2012; Goodman, 2011). As the climate crisis and fossil-fuel dependency pose serious threats to future healthcare, nurse educators arguably have an obligation to prepare students for the consequences and ensure they are equipped to deal with the associated healthcare planning and resource issues. A nurse who cannot make the links between clinical waste, resource use, carbon reduction and health inequalities will not be able to devise solutions for future healthcare challenges.

Topics can be embedded using practical, vocational examples, while learning opportunities can be created by framing topics that are relevant to nursing in the context of:

- Public health and health inequalities;
- Poverty;
- Food security;
- Links between health and the natural environment;
- Infectious diseases (Barna et al, 2012).

Increasingly, students expect sustainability to form a component of their university experience, and higher-education institutions will need to respond to this (National Union of Students, 2018).

Cruz et al (2018) conducted research in four Arabic-speaking countries and found student nurses had positive attitudes towards including sustainability in the nursing curriculum. Similarly, student nurses in the UK – who, initially, had limited awareness of sustainability and the climate crisis in healthcare and, therefore, did not see the relevance of this topic for their education – demonstrated greater

Box 1. Survey statements

Statements in the 2014 and 2019 surveys:

- Climate change is an important issue for nursing
- Issues about climate change should be included in the nursing curriculum
- Sustainability is an important issue for nursing
- Sustainability should be included in the nursing and midwifery curriculum
- I apply sustainability principles at home

Additional statements in the 2019 survey:

- All university students should learn about the impact of climate change when studying their subject
- Concerns about the environment influenced my choice of university
- This university's sustainability reputation influenced my choice of university

awareness following relevant educational interventions (Richardson et al, 2019).

Study design and methods

Given the increasing public awareness of the climate crisis and environmental damage, our study aimed to investigate student nurses' attitudes about the crisis and sustainability at the start of their undergraduate studies in 2019 and compare them with those of student nurses starting their degree programme in 2014. Our objectives were to:

- Assess and compare the two groups' baseline attitudes towards sustainability and the climate crisis;
- Determine the extent to which student nurses believe topics on sustainability and the climate crisis should be included in nursing education, and whether this influenced their choice of university.

Griggs et al (2017) identified some confusion around the term 'sustainability' when applied in the context of nursing. In this article, and the research study it discusses, it is defined as "more than merely lasting or surviving; it means designing and delivering healthcare that uses resources in ways that don't prejudice future health and wellbeing" (Naylor and Appleby, 2012).

We adopted the "triple-bottom-line" framework of economic development, social development and environmental protection that is consistent with Baid et al's (2019) research, emphasising the relationship between financial, social and

environmental concerns when considering definitions of sustainability in critical care practice.

Our study methodology took the form of a comparative independent-subjects survey design, using an adapted version of Richardson et al's (2016) Sustainability Attitudes in Nursing Survey questionnaire. Data was collected in 2014 and 2019 from first-year student nurses studying undergraduate adult, children's or mental health nursing at a university in the south west of England. In September 2019, students were asked to complete the survey at an induction session; the majority were studying one particular field of nursing, although a small number were studying a combination of two fields over four years rather than three. Data for students commencing their studies in September 2014 had been previously collected for an earlier study – by Richardson et al (2019) – anonymised and entered into a statistics data file.

The questionnaire was specifically developed to assess student nurses' attitudes towards sustainability and the climate crisis, and the possible inclusion of these topics in the nursing curriculum. It comprised five statements, each requiring a response on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). The questionnaire has been used to evaluate sustainability educational sessions (Richardson et al, 2017), has demonstrated good psychometric properties (Richardson et al, 2016) and has been translated for use in Arabic, Dutch, German, French, Swedish and Spanish. We included an additional three statements in the 2019 version to determine the extent to which the inclusion of sustainability topics influenced students' choice of university (Box 1).

We designed the timing of the survey's completion to capture students' attitudes before any sustainability and climate crisis education had taken place on their course: surveys were completed at the start of a sustainability induction session delivered in the first two weeks of the course and administered by the tutor running the session. They did not require any details that allowed students to be individually identified and ethical approval was gained from the university's research ethics committee.

We analysed the data collected using a combination of descriptive and inferential statistics. The 2019 and 2014 data was compared using independent *t*-tests and Levene's test for variances. We also analysed the 2019 data for any differences between student attitudes on the adult, children's and mental health nursing programmes.

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Table 1. Comparison of students' statements from 2014 and 2019

Statement	Mean score		p-value
	2014	2019	
Climate change is an important issue for nursing	4.64	5.63	0.000
Issues about climate change should be included in the nursing and midwifery curriculum	4.13	5.10	0.000
Sustainability is an important issue for nursing	5.22	5.90	0.000
Sustainability should be included in the nursing curriculum	4.85	5.61	0.000
I apply sustainability principles at home	4.82	5.33	0.000

Statistical significance levels (*p*-values) were set at <0.05; the mean was used as the measure of central tendency and illustrates the average score for each statement.

Study results

In total, 245 questionnaires were completed in 2014 and 301 in 2019. We found statistically significant differences between the two groups of students for all five survey items: the mean scores indicated greater agreement with the statements for students responding in 2019 (Table 1).

We carried out a one-way analysis of variance for 269 of the 301 questionnaires returned by the 2019 group of students. These were all students studying a single field of nursing; the remaining 32 students were on combined programmes and were excluded from this subgroup analysis as the numbers on individual programmes were too small. The analysis demonstrated statistically significant differences between groups for seven of the eight survey items; the exception was the statement on applying sustainability principles at home.

Due to this between-group variance for the 2019 students, we analysed the subgroups using independent *t*-tests to compare the data from the three different fields (adult, children's and mental health nursing). We found statistically significant differences between students in the adult (*n*=172) and children's (*n*=51) nursing fields; compared with those studying children's nursing, mean scores indicated greater agreement with the following statements by students on the adult nursing programme:

- Issues about climate change should be included in the nursing and midwifery curriculum (*p*=0.00);
- Sustainability should be included in the nursing and midwifery curriculum (*p*=0.00);
- All university students should learn about the impact of climate change

when studying their subject (*p*=0.002);

- This university's sustainability reputation influenced my choice of university (*p*=0.007) (Table 2).

Statistically significant differences were also found between students in the adult (*n*=172) and mental health nursing fields (*n*=46), with greater agreement with the following statements by mental health student nurses:

- Sustainability should be included in the nursing and midwifery curriculum (*p*=0.01);
- Concerns about the environment influenced my choice of university (*p*=0.05) (Table 2).

We also observed statistically significant differences between students on the children's (*n*=51) and mental health (*n*=46) nursing fields for six of the statements on the questionnaire (*p*<0.001).

Mean scores indicated greater agreement with the following two statements from the mental health student nurses (Table 2):

- Climate change is an important issue for nursing (*p*=0.004);
- I apply sustainability principles at home (*p*=0.029).

All mean scores for the mental health nursing students were higher than those of the adult and children's student nurses (Table 2). The mean scores for all student nurses' responses to the following statements showed relatively low agreement:

- Concerns about the environment influenced my choice of university;
- This university's sustainability reputation influenced my choice of university.

Discussion

Student nurses beginning their studies in 2019 were more likely than those starting in 2014 to agree with statements indicating that climate crisis and sustainability are important topics for nursing and should be included in the curriculum. There was little difference between students from the

different year groups regarding the statement about applying sustainability principles at home, which suggests sustainability principles may be more embedded in the home context. The results indicated that students starting in 2019 were more likely to link environmental damage and sustainability issues to their chosen profession in nursing and healthcare. However, while these students generally agreed that all university students should learn about the impacts of the climate crisis, this was unlikely to significantly affect their choice of university.

The subgroup analysis indicated variations across students in different fields of nursing; those on mental health nursing courses were most likely to agree that the climate crisis was an important issue for nursing and it was more likely to influence their university choice. This was an interesting and unexpected finding that needs to be studied in greater depth, possibly through qualitative research that explores personal perceptions of environmental stewardship and how this might translate into students' chosen professions.

Grigg et al (2017) highlighted that confusion about the term 'sustainability' can result in psychological barriers to action at both an individual and collective level, particularly when there are conflicting priorities. However, recent actions, such as those of Greta Thunberg, have raised awareness about the interconnectedness of our activities and the destruction of the environment and extinction of a range of species. In particular, *Blue Planet II* emphasised the significant damage caused to the oceans by the disposal of plastics. The use of plastics in healthcare is ubiquitous and student nurses may be starting to make links between healthcare practice and environmental damage in a more marked way.

Sustainability can be embedded in the healthcare curriculum through a range of learning opportunities; this can be done by:

- Contextualising the climate crisis in clinical practice and in broader global health issues;
- Considering opportunities for adaptation and mitigation (Schwerdtle et al, 2020; Richardson et al, 2019).

Each learning programme should have sustainability literacy for its student nurses that sits in a broader context of links between health and the natural environment, including health inequalities and opportunities for chronic disease prevention (Barna et al, 2012).

The current coronavirus pandemic adds a further dimension: although, at

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Table 2. Mean scores for single-programme nursing students in 2019

Statement	Students' mean score by speciality		
	Adult nursing	Children's nursing	Mental health nursing
Climate change is an important issue for nursing	5.62	5.16	5.85
Issues about climate change should be included in the nursing curriculum	5.16	4.16	5.48
Sustainability is an important issue for nursing	5.93	5.41	6.28
Sustainability should be included in the nursing curriculum	5.65	4.78	6.20
I apply sustainability principles at home	5.34	5.10	5.63
All university students should learn about the impact of climate change when studying their subject	5.62	4.84	6.09
Concerns about the environment influenced my choice of university	2.92	2.14	3.54
This university's sustainability reputation influenced my choice of university	2.79	2.22	3.37

present, there is no known direct evidence that the climate crisis is influencing the spread of Covid-19, climate change, deforestation and habitat loss impact greatly on how humans relate to other species. For example, these factors are bringing animals into contact with other species (including humans) to whom they would not otherwise be close, which is creating opportunities for pathogens to enter new hosts ([Bit.ly/BernsteinClimate](https://bit.ly/BernsteinClimate)).

The climate crisis has already increased the spread of infectious diseases, such as Lyme disease, and mosquito-borne conditions, thereby emphasising the issue's importance in the context of global health. Furthermore, the struggle by many countries to procure adequate PPE during the coronavirus pandemic highlights not just the challenges for healthcare – such as reliance on a sustainable supply chain – but also the sheer amount of single-use, disposable PPE that is used and the negative environmental impact of its incineration and contribution to global warming.

The data gathered through our study indicates that, since 2014, there has been a change in attitude towards the climate crisis and sustainability in nursing and nurse education. We cannot link this change to any one factor; nonetheless, due to the actions of key figures, such as Greta Thunberg, greater awareness among the general public about the climate crisis and environmental damage is likely to lead to students entering higher education being more conscious of the issues.

Although our study suggested that sustainability reputation is not a statistically significant factor in university choice, this may change in the future as aspiring student nurses see the importance of

acquiring skills for mitigation and adaptation. That there are professional organisations such as the ICN calling for nursing leadership in climate change and health, along with a nursing student body that is more climate crisis aware, indicates a need for nurse educators to respond. Further research is needed across the UK, to give more extensive data on student nurses' awareness of sustainability and the links between health and the climate crisis. Qualitative studies are also required to give a deeper understanding of how these topics can be embraced and integrated into nursing studies.

This study's results give some indication of the current attitudes towards the climate crisis and sustainability of those students embarking on a nursing career. It highlights the extent to which student nurses understand the relevance of sustainability and the climate crisis for their chosen profession, and can help inform the development and embedding of sustainability topics in the nursing curriculum. **NT**

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