

2023-07-25

Collaborative leadership to support sustainability in practice for dietitians as allied health professionals

Pettinger, C

<https://pearl.plymouth.ac.uk/handle/10026.1/21530>

10.1111/jhn.13211

Journal of Human Nutrition and Dietetics

Wiley

All content in PEARL is protected by copyright law. Author manuscripts are made available in accordance with publisher policies. Please cite only the published version using the details provided on the item record or document. In the absence of an open licence (e.g. Creative Commons), permissions for further reuse of content should be sought from the publisher or author.

Collaborative Leadership to Support Sustainability in Practice for Dietitians as Allied Health Professionals

Pettinger Clare*^o

Tripathi Smita**

Shoker Benji**

Hodge Gary***

*^o **corresponding author** – Clare Pettinger, Peninsula Allied Health Centre (PAHC), School of Health Professions, Faculty of Health, University of Plymouth.

clare.pettinger@plymouth.ac.uk 01752 588822

**Plymouth Business School, Faculty of Arts, Humanities and Business, University of Plymouth

***Research Fellow, School of Nursing and Midwifery, Faculty of Health, University of Plymouth

Author Contributions

CP: designed and co-led the research project, observer in focus group 1, data analysis, drafted and submitted the manuscript. ST: co-led research project, supported interviews and focus groups, data analysis & triangulation, reviewed manuscript. BS: research assistant, led interviews and focus groups, preliminary analysis, review of manuscript. GH: Research Fellow-led thematic analysis, triangulation, interpretation and review of manuscript

Transparency Declaration

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported. No important aspects of the study have been omitted.

The authors declare "no conflicts of interest" for this manuscript.

Key words

Green agenda; Sustainability; Healthcare; NHS net zero; Collaborative leadership; Allied Health Professionals; Dietitians; dietetic practice; planetary health

Key points:

- There is a need for Allied Health Professionals (AHP) to embrace the NHS net zero agenda
- Dietitians are AHP with existing competencies to act as advocates for environmentally sustainable diets
- This research uses qualitative approaches (interviews and focus groups) with current and future AHP leaders
- Findings illustrate the need for dietitians to step up to their collaborative leadership role to tackle greener healthcare practices

ABSTRACT

Background

Allied Health Professionals (AHPs) have an important role to support the *Greener* NHS agenda. Dietitians are AHPs who are already demonstrating strong influence on food sustainability advocacy. There is call for more collaboration across the health professions to optimise 'green' leadership in the pursuit of planetary health. This study aimed to investigate the perceived role of AHP leaders and future leaders around more sustainable healthcare practices.

Methods

A mixed methods approach using audio-recorded semi-structured interviews with strategic AHP leaders (n=11) and focus groups with student AHPs (n=2). Standardised open-ended questions considered concepts of i) Leadership, ii) Green Agenda, iii) Collaboration and iv) Sustainability. Purposive sampling used already established AHP networks. Thematic analysis systematically generated codes and themes with dietetic narratives drawn out specifically as exemplars.

Findings

Findings represent diverse AHP voices, with 6/14 AHPs analysed, including dietetic (future) leaders. Three key themes emerged: 1) Collective vision of sustainable practice; 2) Empowering, enabling, and embedding; 3) Embracing collaborative change. Dietetic specific narratives included food waste, NHS food supply chain issues and tensions between health and sustainability advice.

Conclusions

This study shows that collaborative leadership is a core aspiration across AHP leaders and future leaders to inform the green agenda. Despite inherent challenges, participant perceptions illustrate how 'change leadership' might be realised to support the net zero agenda within health and social care. Dietitians possess the relevant skills and competencies, and therefore, have a fundamental role in evolving collaborative leadership and directing transformational change towards greener healthcare practices. Recommendations are made for future leaders to embrace this agenda to meet the ambitious net zero targets

INTRODUCTION

The health and care system in England, UK, is responsible for an estimated 4-5% of the country's carbon footprint ⁽¹⁾. In October 2020, the National Health Service (NHS) became the world's first national health system to commit to net zero emissions in response to the health threat posed by the climate emergency. *Delivering a Net Zero NHS* sets out how reductions to the relevant elements will take place that the NHS controls directly to net zero carbon by 2040, in order to ensure that our health system contributes towards the national ambition to be carbon neutral by 2050 ⁽²⁾.

Within the UK, Allied Health Professionals (AHP) are the third biggest workforce within the NHS, and are, therefore, crucial players in the commitment to becoming a 'Net Zero' NHS ⁽¹⁾. There have been significant recent developments to spearhead this agenda. For example, the recently published AHP Greener Hub ⁽³⁾ sets out practical guidance for AHPs to be greener in their practice areas. More recently, the AHP Strategy for England has environmental sustainability as a key focus for action ⁽⁴⁾ emphasising workforce, models of care and resource use ⁽⁴⁾. AHPs have a vital role in driving the sustainable healthcare agenda ⁽⁵⁾, as they are generally highly trusted and have influences at all levels of society. But are they ready for this task?

Dietitians are AHPs who are already demonstrating strong influence on advocacy for food (system) sustainability ^(6,7) and planetary health ^(7,5). In the UK, for example, dietitians are already combining healthy and sustainable dietary advice ⁽⁸⁾, supported by the British Dietetic Association's pioneering One Blue Dot toolkit ⁽⁹⁾, which has been regarded globally as an example of best practice. Similarly, diet and nutrition feature in the AHP Greener Hub ⁽³⁾ with insight provided into appropriate oral nutrition supplement prescribing ⁽¹⁰⁾, reductions in food waste ⁽¹¹⁾ and Making every Contact Count (MECC) ⁽¹²⁾. There remains, however, recommendations for stronger leadership, learning and collaboration for dietitians in practice ⁽¹³⁾, to more consistently champion this agenda.

The effective implementation of the net zero NHS goal requires strategic vision and resourceful execution from AHP current leaders and managers, complemented by organic and innovative buy-in from the AHP workforce (future leaders). Current green leaders recognise that the climate crisis is also a health crisis ⁽¹⁴⁾ and that health services need to deliver high quality care for patients now *and* for future generations. As far as future leaders go, there is

growing interest from Higher Education ⁽¹⁵⁾ to support curriculum developments to align with education for sustainable development guidance ⁽¹⁶⁾ so that ‘*all learners acquire the knowledge and skills needed to promote sustainable development*’ ⁽¹⁷⁾. AHP curricula are beginning to reflect this need, but with some degree of inconsistency. More collaboration is needed, therefore, across the AHP health professions, to optimise ‘green leadership’ ⁽⁵⁾.

There is a literature gap showing that while the Greener NHS agenda is universally acknowledged as an urgent issue, strategic collaborative leadership ^(18,19) implications have, so far, not received the same focus. Amplifying the voices of the AHP workforce, (exemplifying dietitians as potential visionary change-makers), is crucial to allow collaborative bridging between top-down and bottom-up agendas. Subsequently, AHPs can support and be supported to embed sustainability within their practice, consolidating present and future training and resilience.

The aim of this research project was to explore the perceptions of strategic leaders and trainee AHPs (future leaders) on ‘collaborative leadership for sustainability’ by asking them to critically consider what ‘being a greener leader’ and ‘sustainability’ mean to them in practice. This paper focusses on AHPs generally and dietitians as exemplars, the latter of whom already possess existing competencies to champion this agenda and realise their potential to support other AHPs towards change leadership.

METHODS

Design

The study employed a mixed methods qualitative in-depth design using semi-structured interviews with AHP leaders and focus groups with future AHP leaders. Qualitative methods are believed to provide a deeper understanding of social phenomena, than would be obtained from quantitative methods ⁽²⁰⁾. The assumptions underpinning this research take a relativist ontological position [i.e. that reality as we know it is constructed inter-subjectively through meanings and understandings developed socially and experientially] ⁽²¹⁾, with social constructivism [complexities of human experiences] also featuring within analytical processes. Transparency with the philosophical perspective in qualitative research is

important, to inform evidence-based practice and demonstrate how and why researchers use certain methods to interpret data. In this case, the researchers accepted that the experience of the (future) leaders would be socially constructed and with this in mind, sought to produce subjective accounts of the (future) leaders’ experiences to inform ongoing analyses and interpretation. The cross-disciplinary research team embraced flexibility and reflexivity [the examination of one’s own beliefs, judgements and practices during research process and how these may influence research], to enable relevant methods to be implemented and critiqued (22).

Participants and recruitment

Purposive sampling was used (23) to recruit AHP strategic leaders [i.e. those employed in an established leadership role] (n=11) and AHP students (n=8) as future leaders (see Table 1 and 2), via an already existing AHP national steering group and various regional student networks. The inclusion criterion was being an AHP ‘leader’ or ‘future leader’ (i.e. student or trainee AHP) from any of the 14 existing AHPs (24). All AHP leaders (n=17) who were active within the AHP sustainability steering group were invited to participate. Student AHPs were contacted via inter-professional learning events and other relevant educational networks.

Table 1. Sample profile of AHP leaders and future leaders

Gender and leadership status	Male	Female
Future Leaders (students) (N=8)	1	7
Strategic Leaders (N=11)	5	6
Total	6	13

Table 2. professional affiliation of AHP leaders and future leaders

Professional affiliation	Strategic Leaders	Future Leaders
Occupational Therapy	3	4
Dietetics	3	1
Podiatry	2	0
Physiotherapist	1	1
Orthoptics	1	0

Speech and Language Therapist	1	0
Others	0	2

Interview (focus group) guide

The semi-structured interview guide was used for interviews and focus groups. It was developed by the research team and based on extensive discussion and literature appraisal. The overall research question was: ‘What role do AHP leaders and future leaders perceive they have in fostering and furthering sustainable and collaborative health practice in response to the NHS Net Zero/Greener agenda?’ Core concepts included (with example questions): i) Leadership (e.g. tell me about your vision and responsibilities as green leader?); ii) Green Agenda (e.g. How do you motivate, influence and persuade others to commit to becoming ‘green’?); iii) Collaboration (e.g. What are your thoughts on collaborative leadership for the greener NHS agenda?) and; iv) Sustainability (e.g. How do you define sustainability in your practice area?). The interview schedule (supplementary file) was tested on one independent healthcare leader (a retired nursing professor with extensive green healthcare leadership experience) and was appraised and discussed and duly modified for use. Following interviews, the interview guide was tailored slightly for use within the student focus groups.

Data collection

Data were collected between April and June 2021. All interviews and focus groups were run using Zoom software⁽²⁵⁾. Two of the investigators, trained in qualitative interview and focus group techniques (XX and XY), alternated roles as moderator and observer for interviews and focus groups, all of which were audio-recorded and transcribed verbatim (using ZOOM transcription services). The third researcher (YX) acted as occasional additional observer making notes, which were subsequently discussed with other research team members.

Data analyses and quality

Qualitative data drawn from the interview and focus group transcripts were analyzed systematically (YY) to generate codes and themes using Braun and Clarke’s⁽²²⁾ six-phase framework. The transcripts were read several times and discussed with all authors to

minimise data selectivity⁽²⁶⁾. NVivo version 12 Pro⁽²⁷⁾ was used as a tool in the coding process and the systematic identification of themes. Thematic Analysis does not aim to generate new theory through interpretation, but aims to extend beyond description alone by offering some form of representative categorization⁽²⁸⁾. Reframing and renaming themes were ongoing, to allow consensus of meaning to be reached across the research team, which offered credibility and validity to the findings through researcher triangulation⁽²⁹⁾. This is perhaps more accurately described as crystallization⁽³⁰⁾ which sums up the diversity of topic knowledge and multi-professional backgrounds of the research team delivering this consensus⁽³¹⁾. All interviewees were given a pseudonym and dietetic specific narratives were drawn out as exemplars to support their inclusion within the context of the write up.

Ethics

Ethical approval was granted from the University of XXX Arts, Humanities and Business Research Ethics and Integrity Committee (ref 3192).

FINDINGS

These sections will offer context and interpretation of the data collected via n=11 interviews with AHP leaders and two focus groups (n=8 participants) with AHP students as future leaders (see table 1 and 2 for participant profile). Analysis proceeded through a narrative description of the three generated themes^(22, 32, 33). The three themes are:

1. *A collective vision of sustainable practice*
2. *Empowering, enabling, and embedding*
3. *Embracing collaborative change*

The themes are presently reported for AHP leaders and future leaders, with dietetic specific quotes highlighted where relevant to exemplify their experiences.

A collective vision of sustainable practice

“It’s about looking for the activists...for the people who actually get it and connect with it, and who can share their vision and influence other people...” (INT - John)

This theme spoke of “telling some of the stories” of sustainability for both current and future leaders. The focus was on sharing the narrative for sustainability and the change required to reach consensus for an overarching vision and direction. Communication (to “signal the priorities”) and education (“raising awareness”) came out clearly within the conversations. Similarly, across participants, there was a clear sense that:

“we all can play a part in this, we all can make a contribution, and that contribution can be small or large” (Diet INT - Anne).

For leaders, the essential narrative was to ensure the green agenda is prioritised, to raise awareness and communicate what is already happening:

“We actually have the ability to keep that narrative going, and keep that message being heard, and to make sure as professional body and as leaders, that we don't lose it from our agenda” (Diet INT - Duncan)

In relation to the dietetic specific leadership perspective on communication with patients:

“My current big vision is I'd like dietitians all to become greener and that is in terms of what they're talking to their patients about [sustainable eating] but also their own behaviours” (Diet INT - Lucy)

The importance of communication was also consolidated by the future leaders:

“I think one of the greatest tools we have is communication and we've got so many ways of communicating now. There's not really any excuse not to be talking about this” (FG 2)

Across participants, despite a recognition of difficulties and challenges, there were motivations abound:

“for a lot of health professionals we didn't need to motivate them, they were all ready, you know very, very kind of motivated about this agenda” (Diet INT - Anne)

Education was highlighted as a barrier by one leader:

“I think the other barrier is education...people need to understand what the agenda is and why... and I don't think everybody does” (INT - John)

Furthermore, one of the future leaders confirmed education as a top priority:

“So education, for me is probably the top priority...within training, but continuing in practice, because education can make such a big difference... like raising awareness” (FG 2)

Empowering, enabling, and embedding

The leaders focused on their need to empower and enable others. They acknowledged the early adopters and recognised the need to champion and showcase best practice. They considered the future leaders as a crucial strength for the next generation. They stated their role to lead by example and support their peers and others on this sustainability agenda. The need to embed into practice and education was called for. This links with the previous theme, and consolidates the need to train and educate:

“All we can do is facilitate support, educate, train, empower” (Diet INT - Duncan)

The leaders acknowledged a different mindset in the future generation of practitioners and were genuinely supportive of how they could engage with, inspire, and empower them in their future practice. One leader highlights the need to enable and support people as change-makers in their own right:

“I think as leaders, it is really incumbent on us...to understand those opportunities, explore them and actually promote ways of being able to support people to see that for themselves and make change happen in their own sphere of influence” (INT - Helen)

One of the dietetic leaders exemplified how to enable dietetic practitioners as educators:

“Then there is a role we have in educating and leading others...They're interested, but they may not have the knowledge, the skills, the expertise in the particular area of food and diet and that's where we actually create an impact in educating and leading and teaching others” (Diet INT - Duncan)

One of the future leaders lamented the ease with which barriers and problems, rather than the enablers, become emphasised:

“it's much easier to bring up the barriers, because we see problems much easier than we see enablers...” (FG 1)

Focusing specifically on the issue of food waste as an enabler towards solutions, one of the dietetic future leaders stated:

“There's definitely something that can be done to reduce food waste in hospitals, because that was a common occurrence [on placement] ...half a plate of food left and maybe speaking to the patients and offering smaller portions” (Diet FG 2)

It was made clear by one leader, that permission is needed as well as space to enable champions within this agenda:

“Getting those people who think that they want to get involved in that agenda and have influence and support their colleagues and their managers with thinking about a greener agenda, giving them the permission and space to do that” (INT-William)

One leader confirmed the importance of embedding the green agenda from a very early stage of professional training:

“We had a couple of meetings with another colleague, from another discipline...I think this is how you embed sustainability within a profession... starting from an undergraduate level and ensuring it should be in and embedded in every aspect of what we do” (INT – Jack)

Overall, there was a clear sense from the leaders that this agenda needs to be more consistently embedded within practice, whether as performance indicators:

“...including sustainability, as... key performance indicators, and ones that are meaningful, as well” (INT – Julie)

Or as a ‘business as usual’ function:

“I think there is something around, you know, perhaps in the next two to three years, there's ...really concerted work for us to make sure that this becomes embedded into a business as usual function” (INT - Helen)

Embracing collaborative change

The need for collaboration was clearly articulated across both groups of participants, who spoke of finding a common purpose, the influence of broader contexts and future agendas

towards change for gain. One leader saw the importance of collaboration with time and resource as key aspects:

“I think collaboration is an activity...it's an endeavour, and it takes time, and it takes resource” (INT – Helen)

Another leader shared that collaboration is a core aspect of good professional practice:

“Joined up working...making every contact count within sustainability, which it really is just good practice” (INT – Chloe)

This is exemplified by dietetic practices around food (and oral supplement) procurement, with one of the dietetic leaders sharing the collaborative nature of their food related practice:

“In the group, we had AHPs, we had caterers, because it is all to do with food...but we also had the manufacturers of the foods and the manufacturers of the supplements, ... that was true multi agency collaborative working” (Diet INT - Lucy)

The future leaders explained that all stakeholder voices are important within this agenda to achieve a common purpose (relating to the first theme):

“getting the opinions and ideas from all the stakeholders involved, so not just people working within NHS or not just the patients, or the suppliers, but a combination and a collaboration between all of them...what they individually think they can do to achieve a green NHS” (FG 2)

Working together to achieve common purpose is deemed important by future leaders but in relation to broader contexts, egos and financial tensions were reported:

“I think it's quite important to kind of work together basically without having your egos...unfortunately, that does happen, especially when money gets involved and factors in that in (sic) decision making” (FG 2)

Future agendas and modelling for future sustainable practice were highlighted as important aspects of collaboration for change. The future leaders considered the need to build a narrative to encourage and be flexible to change:

“We're coming into our professions...but we'll be working with people who have many years of experience...I think, across the board, everyone needs to be flexible to change” (FG 2)

With an interesting contextual point also added about students as future leaders having fresh (unadulterated/innovative) views to influence future agendas:

“...listening to students as they're fresh...They've not become institutionalized, indoctrinated into a system yet...” (FG 1)

The role of future leaders to incorporate this [green agenda] into their clinical reasoning skills was highlighted by this leader:

“My feeling about students is they...can get it and integrate it into their clinical reasoning” (INT - Tim)

And finally, the need for AHPs to act as key influencers and leaders (particularly dietitians) was demanded by this leader:

“We also want to make sure that allied health professionals are at the right table and influencing the environmental sustainability agenda in their organizations....and taking a lead in some areas, particularly if there are areas like... say food and diet where, you know, dietitians would be kind of pivotal” (Diet INT – Anne)

DISCUSSION

This study aimed to explore the perceptions of strategic leaders and trainee AHPs (future leaders) on ‘collaborative leadership for sustainability’ by asking them to critically consider what ‘being a greener leader’ and sustainability mean to them in practice. Interviews and focus groups were used to collect qualitative data. The study findings illustrate three key themes that emerged from the participants narratives. Firstly, a ‘collective vision of sustainable practice’, the focus being on sharing the narrative for sustainability and the change required to reach consensus for an overarching vision and direction. Communication

and education came out clearly as core considerations. Secondly ‘empowering, enabling and embedding’ - across participants there was a desire (especially from leaders) to act as role models, to empower and enable others to share best practice. The leaders commended early adopters and acknowledged the future leaders as having a role for future generations. Across both participant groups, the need to embed sustainability within training and practice was deemed a priority. Finally, there is a clear call to ‘embrace collaborative change,’ with a ubiquitous agreement across participants for more effective cross-sector (and disciplinary) working, to realise this common purpose. The future leaders recognised the need for change and identified broader contexts, barriers, and enablers to this change, including some tensions around their perceptions of leadership in relation to egos, financial constraints, and lack of flexibility. There was a call to collectively face the barriers, embrace the change with flexibility, to influence future agendas and modelling for more sustainable practice. Dietitians specifically were exemplified as having an amplified voice within the narratives, already showing strong competencies as educators and influencers. Furthermore, the future (dietetic) leaders understood the need for communication and education, and also how to use specific problems and solutions (eg food waste) to engage and empower dietitians to take action toward the broader green agenda. The present discussion will critique findings in the context of the wider literature making recommendations for training and practice.

A Collective vision of sustainable practice

All participants showed motivation for this agenda confirming that “we can all play a [small or large] part in this” (Diet INT - Anne). Participants spoke of the need for communicating the narrative for sustainability and the change required to reach consensus for an overarching collective vision and direction. Communication (to “signal the priorities”) and education (“raising awareness”) came out clearly within the conversations.

This ‘sharing of the vision’ aligns with the NHS leadership framework⁽³⁴⁾ and motivation to engage in this agenda is known to be high within the NHS^(35,36). Communication is a core professional component for all AHPs to ensure the delivery of quality patient-centred care⁽³⁷⁾. As AHP roles and models of care evolve, however, the nature of the communication required is also changing. Advancements of digital technology mean the communication skills needed for practice are shifting⁽³⁸⁾ for example the emergence of online consultations

(³⁹) and use of social media (⁴⁰) to promote best practice and align with net zero agendas (³). This was consolidated by the future leader participants: “there is no excuse not to be talking about this” (FG2). Yet there are apparent tensions, because of the recognition for AHPs to prioritise healthcare needs first. Many AHPs work with vulnerable patients and diverse communities, and not every approach to sustainability will be appropriate or applicable (³).

Communication is a key element of practice for dietitians specifically (⁴¹) to support the promotion of diet related behaviour changes. Indeed, dietitians have a role as knowledge translators (⁴²), and their emerging role to support environmental sustainable diets and food systems has been clearly evidenced (^{7, 9}). For dietitians to become greener practitioners was highlighted by one of our dietetic leader participants who has a vision for all dietitians to be talking to patients directly about sustainable eating. Yet there remains scarce literature on *how* to promote sustainable diets in practice (⁴³), a focus that now requires attention, despite the apparent tensions e.g. “So obviously, clinical advice is really, really important...but sometimes it conflicts (or they feel it might conflict) with sustainable eating” (Diet INT - Lucy). Communication to “signal the priorities” towards a collectively developed vision has been deemed an important step forward and to find common ground (¹³) to reach consensus on this green agenda for dietitians as AHPs.

There was a clear message from participants that the green agenda needs to be prioritised for AHPs. Our study findings suggest the need for improved AHP education for sustainability literacy generally to enhance understanding of the green agenda. This chimes with the recent AMEE consensus statement (⁵) which stipulates the need for sustainable healthcare education to equip current and future health professionals with the knowledge, values, confidence, and capacity to provide environmentally sustainable services through health professions education. Across AHPs, it seems that a new mind-set and skillset are needed, to champion the green agenda. AHP educational curricula are beginning to reflect this need (^{44, 45}) but with some degree of inconsistency. The evidence is strong and the strategies are in place already (^{4, 46}) but now the focus should be on the *how* to deliver appropriate education programmes to support (future) practitioners.

Effective communication skills are emphasised as a target for health professional education programmes (⁴⁷). Our findings confirm that raising awareness via education is vital. Our participants perceived lack of knowledge to be a barrier for some and education a top priority.

Yet a limited understanding exists on the education and training needs within this emerging area of practice⁽⁴⁸⁾ and educators often feel ill-prepared for teaching sustainability matters⁽⁴⁹⁾.

Universities as Higher Education Institutions (HEI) are potential sites for transformation around sustainable education⁽⁵⁰⁾ to align with sustainable development goals⁽¹⁷⁾ and the recently published sustainable development guidelines⁽¹⁶⁾. Indeed Sterling et al., (2017) argue that in order to achieve this blueprint for a more sustainable future for all, we require a revolution within educational provision that nurtures a global citizenry with a common set of change-leadership competencies⁽⁵⁶⁾. Such education needs to draw from us all a sense of hope and compassion⁽⁵¹⁾. When embedding into dietetic curricula specifically, education for sustainability should be throughout every subject⁽⁵²⁾, as a cross cutting theme rather than a topic⁽⁵³⁾. This means more innovation is required to incorporate experiential learning⁽⁵⁴⁾ and sustainability focussed scenario based approaches to learning⁽⁵⁵⁾ within curricula⁽⁵²⁾.

Furthermore, from an AHP practitioner perspective, Continued Professional Development (CPD) is essential to ensure that skills and knowledge remain up to date to provide optimal healthcare⁽³⁷⁾. This is consolidated by Alberdi and Begirstain-Zubillaga⁽⁴³⁾ who state a need to “step aside from the reductionist view of [nutrition and] health towards an integral [food] systems view” which further supports Sterling’s⁽⁵⁶⁾ call for critical systems thinking as a core competency within education for sustainability. A collective vision for sustainability is recommended as crucial to meet this goal, and AHP professional education and training programmes need to embed specific elements of sustainability literacy including communication of consistent messages for trainees and practitioners across healthcare.

Empowering, enabling, and embedding sustainability in practice and training

This theme emerged strongly across participants. The leaders outlined their wish to be better role models to empower and enable others to share best practice. The future leaders recognise a need for change, and identified barriers and enabler towards solutions (e.g. food waste).

Empowering others is a core component of traditional leadership styles that ‘encourage contribution’⁽³⁴⁾, boosting autonomy and thus facilitating transformation⁽³⁴⁾. The term ‘empowerment’ is rooted in social action and aims to increase the autonomy, power, and influence of oppressed groups. It is increasingly used and is described as representing a shift

from a paternalistic to a participatory way of thinking about health and healthcare⁽⁵⁷⁾. Our leader participants had a genuine desire to empower others, and fully acknowledged ‘early adopters’ and saw the future leaders as having a crucial role for future practice, commending them on their different (more positive) mind-set. This can be seen as part of compassionate leadership and evidence supports its role for engagement and motivation resulting in better wellbeing and quality healthcare⁽⁵⁸⁾. Yet from the future leader responses, it was clear that this empowerment relationship should be two-way i.e. there is scope for a shift in power so that future leaders can empower leaders. This hints towards co-production as a philosophy, which is about capturing diverse voices to set strategies and is proposed as essential in sustainability science⁽⁵⁹⁾ and is mapped as vital within the recent AHP strategy⁽⁴⁾.

The future leaders acknowledged the ease with which barriers and problems are emphasised rather than enablers. This is commonplace within sustainability discourses due to the complexity of the topic, which can feel overwhelming and often results in immobilization to take action⁽¹³⁾. Yet one future (dietetic) leader took a ‘problem’ (food waste) as a potential enabler, proposing practical ideas for food waste prevention as part of dietetic practice. Such displays of self-efficacy can be seen as enabling factors to support dietitians to embed sustainability in their professional practice⁽⁶⁰⁾. This takes courage and agency⁽⁶¹⁾ and follows the BDA Future dietitians’ campaign to “be bold, brave and innovative”⁽⁶²⁾. There has been a call for dietitians to amplify their visibility by consolidating their skills and becoming more sustainability literate^(6,7,13) so they can act as role models to support other AHPs. The role dietitians have in enabling, educating, and leading others was consolidated by our dietetic leader Duncan: “...expertise in the particular area of food and diet and that’s where we actually create an impact in educating and leading and teaching others” (Diet INT – Duncan). This confirms that dietitians are already demonstrating strong influence on advocacy for food (system) sustainability as are already embedding within curricula^(44,63) albeit inconsistently. Dietitians, should, therefore acknowledge their place as role models to lead enable, and educate others around environmental sustainability literacy.

Across both participant groups, the need to embed sustainability within professional training *and* practice was featured as a priority. The theme above has already recommended how Higher Education curricula (AHP trainees) and CPD (practitioner) programmes are needed to support environmental sustainability literacy across AHPs.

In addition to this, embedding into practice was reported, which is in line with the NHS net zero agenda⁽⁶⁴⁾ highlighting this as a key responsibility for all healthcare staff. One leader suggested that sustainability should be included as a meaningful key performance indicator (KPI). The notion of KPI for sustainability has been outlined in detail in a business context, in relation to the three pillars of sustainability (environmental, social and economic)⁽⁶⁵⁾. Similarly, analysis has been done in relation to KPIs of circular supply chains in the healthcare sector⁽⁶⁶⁾. But in relation to health professionals specifically there is a paucity of data to support KPI for sustainability. There is a proposed role of the educators to support this⁽⁶⁷⁾, whereby there is an essential need to engage multiple stakeholders to achieve consensus on an approach towards indicator development, possibly using SDG indicator framework as an aide⁽¹⁷⁾.

In relation to practice, there is “concerted work to [be done to] ensure embedding [sustainability] within a ‘business as usual’ function” (INT - Helen). AHPs have the ambitious yet essential task to engage in this agenda to align with NHS net zero⁽¹⁾ and subsequent AHP strategy⁽⁴⁾ to enhance understanding around net zero. Resources such as the Greener AHP hub and AMEE declaration⁽⁵⁾, can support practitioners and leaders alike. Other important evaluative tools also exist to measure impact and quality of healthcare improvement projects. One such example is the Sustainability in Quality Improvement (SusQI) model^(68, 69) which embeds sustainability into quality improvement to address the social and environmental challenges in healthcare as a core part of professional practice. Recommendations are made, therefore, to consider co-creating KPIs for sustainability across healthcare professions and utilising already existing tools by which to monitor improvement and quality of (greener) healthcare. But ‘giving them [early adopters] permission and space to do that’ (INT - William) to enhance their agency⁽⁶¹⁾ for this agenda is also essential.

Embracing collaborative change

The need for collaboration was clearly articulated across both groups of participants, who spoke of finding a common purpose, the influence of broader contexts and future agendas towards positive change. The future leaders recognised the need for change and identified broader contexts, barriers, and enablers to this change, including some tensions around their perceptions of leadership in relation to egos, financial constraints, and lack of flexibility.

There was a call to collectively face the barriers, embrace the change with flexibility, to influence future agendas and model more sustainable practice.

It is relevant to note that our future leader participants felt that getting opinions and ideas from all stakeholder voices (including patients) is important for common purpose within the green agenda. This echoes the aforementioned concept of 'co-production' (^{4,59}), whereby sustainability discourses call for a more reflexive and equitable exchange of knowledge across stakeholders. Yet within healthcare, such an approach often fails to account for power within traditionally hierarchically formed leadership relationships (⁷⁰). Furthermore, the future leader comment relating to broader contexts e.g. egos and financial tensions was particularly relevant. This not only hints at the healthcare students perceptions of the pitfalls of power and control within traditional leadership models (⁷¹) whereby they (as students) may feel they lack agency (⁶¹), but it also acknowledges understanding of the economic strains currently faced by the healthcare service (⁷²). There were more contextual comments made by the future leaders, consolidating the importance of their voices being more amplified within this green agenda. One point stated to listen to students because they are "fresh and have not become institutionalized or indoctrinated into a system yet" (FG1) (⁷³) Another focused on the need to be flexible in order to embrace change, suggesting that some experienced practitioners may be set in their ways, making it hard for students to challenge their authority (⁷⁴). There is a need to tap into these fresh innovative ideas that students bring to the sustainability agenda, to give them more agency (⁶¹) to embrace this challenge, which was also supported by the leaders we interviewed and suggests more flexibility to change is required in experienced healthcare practitioners.

The theme already discussed above has shown that the leaders recognise the importance of the future leaders to model more sustainable future practice. The leaders also highlighted that collaboration is an activity, and endeavor that takes resource, but that should be an inherent part of professional practice "Joined up working - making every contact count within sustainability" (INT - Chloe). Collaborative working is a key function of AHP (⁴) and the MECC agenda is a place where sustainability practices could be embedded (¹²), a key vision already highlighted for dietetic practice and furthermore an opportunity for dietitians to train other AHP on diet and nutrition aspects of the green agenda.

The call for collective action across our leaders and future leaders participants reflects the need for a new kind of leadership⁽¹⁹⁾, which chimes with literature on leadership for sustainability. In contrast to traditional models of hierarchical leadership which can often be disempowering⁽⁷⁵⁾, leadership for sustainability identifies and empowers the leader that inherently exists in each person and fosters strong healthy sustainable and socially just change through collaborative and creative means⁽⁷⁶⁾. Thus leaders, rather than providing a solution, “create opportunities for people to come together and generate their own answers”^(77 p31). Such empowering, relational and collaborative leadership styles are associated with positive outcomes in healthcare⁽⁷⁸⁾. They are less about individual leaders and face the practical reality of how to practise change together in environments where *‘nothing is clear, and everything keeps changing’*⁽⁷⁹⁾, such as the healthcare setting. Collaborative leaders must lead change in the face of uncertainty and ambiguity by strengthening and building relationships and preparing future health leaders to navigate complex systems and rise to these challenges⁽⁸⁰⁾. Support for the sustainability agenda needs to be ubiquitous and collaborative rather than coming from one actor or sector⁽¹³⁾. In relation to NHS net zero specifically, implications for leaders have recently been reviewed⁽³⁶⁾ to support the urgency of this agenda and the mind-set and culture change required. Evidence shows that education providers, regulators, professional associations, and citizens need to work together to realise the roles that will deliver on better health for all⁽⁴²⁾. Recognising everyone’s expertise on this green topic and nurturing their agency⁽⁶¹⁾ is an important step for both current and future leaders. This may go some way to balance power within current leadership models and boost the confidence of students coming into their professions by offering them transferable skills within curricula⁽⁵⁾ to build within them ‘eco-ethical’ leadership (and followership) competencies⁽⁸¹⁾ and co-create ‘leadership collectives’⁽⁸²⁾ to achieve the necessary structural changes required for equitable and long lasting sustainability transformations.

Dietetics specifically is already showing bold visionary leadership, exemplified in our findings as being “pivotal” in relation to (e.g.) food and oral supplement procurement. Food waste in hospitals is a serious environmental issue in the UK⁽⁸³⁾ and is being collaboratively tackled as part of the NHS net zero strategy⁽⁶⁴⁾ and wider national food strategy⁽⁸⁴⁾. Observationally, this research project suggests that dietitians are already championing the green agenda (in education and professional practice contexts), and other professional disciplines felt they had further to go – so this needs to be seen as a catalyst for the dietetic

profession. Despite the inherent challenges, barriers and tensions in combining healthy eating with sustainable eating within dietetic behaviour change strategies ⁽⁶⁾, dietitians are well placed to push the boundaries of collaborative leadership on this agenda. The BDA are already engaging their membership in the UK via shared practical resources ⁽⁹⁾ and AHP greener hub ⁽³⁾ and international research is showing that dietitians have a key role in leading on this agenda ^(13,63). This all serves to boost confidence in dietetic practitioners to lead with conviction to support other AHP to develop their green competencies. Dietitians must now, therefore, step fully into their role as leaders and educators of other AHPs to promote sustainable diets and food systems within broader healthcare contexts. Such collaborative supportive leadership will demonstrate their agency to enhance workforce capacity for environmentally sustainable healthcare at scale.

Limitations

This study has various strengths. The findings are drawn from interviews and focus groups with AHP leaders and future leaders focussing on a topic that has not received much attention in the literature to date – (collaborative) leadership for sustainability. The methodological approach was firmly rooted in the evidence base ⁽²⁶⁾ with rigour and trustworthiness optimised within in our analysis. We believe that the authenticity, narrative strength, and depth provided by our AHP participants voices are worthy of consideration for informing green agenda change-leadership within healthcare. There are however some inherent limitations. Caution should be taken when interpreting these findings from n=11 leaders and n=8 future leaders because it may not be representative of all AHPs. In addition, the sampling method (purposive) may have led to sampling bias ⁽⁸⁵⁾. We drew out dietetic specific narratives to focus on the dietetic context, but small sample size means not all voices were represented. This points to the need for further research to build on this small study, to explore further the context of collaborative leadership. Similarly, research is needed to investigate the agency ⁽⁶¹⁾ required for AHP practitioners to embrace and enable greener healthcare to align with the NHS net zero agenda.

CONCLUSIONS

This study has shown that collaborative leadership is a core aspiration across AHP leaders and future leaders to advance and implement the green agenda. Despite inherent challenges and barriers, participant perceptions illustrated the importance of a shared collective vision of greener practice, which needs to be translated into action outcomes by empowering, enabling and embedding greener professional values consistently within training and practice.

Similarly, the need to embrace collaborative change is exemplified to inform how 'change leadership' might be realised to achieve the goal of net zero emissions within health and social care, whilst balancing existing organisational and health care demands and needs. This is challenging within a complex body like the NHS, but the leadership agenda is already tackling this ⁽³⁶⁾ to support the necessary mind-set and cultural shifts required.

Recommendations are made for future leaders to embrace this agenda to meet the ambitious net zero targets: i) Clarity of a collective vision with greater attention on educational and developmental interventions including an emphasis on sustainability literacy and consistent green communication and messages among current and aspiring leaders; ii) Consideration of co-design and production of KPIs across AHPs supported by other metrics, including cultural and value change for measuring success for greener models of healthcare practices; iii) Appreciation of expertise (of current and future leaders) on green action and building required confidence and agency ⁽⁶¹⁾ for practitioners to initiate and maintain short and long term changes; iv) Creating space for leadership by Dietitians as AHPs - with their advanced and already robust collaborative competencies and intelligence on this topic, they can be supported to step into leadership roles and champion advocacy and education, so that environmentally sustainable diets and food systems can be more optimally promoted within AHP networks and wider healthcare contexts.

This study acknowledges some of the hierarchical and systemic challenges faced within greener healthcare training and practice at all levels within organisations and outside with partners. It recognizes the potential role of AHPs in breaking down barriers and being agents of change and working together for mutual learning and effective engagement within the green agenda. Dietitians specifically are identified as experienced and compassionate trailblazers, already driving forward the green agenda. Their leadership skills must, therefore, be nurtured to inspire change; building, empowering and educating other AHPs in a call to action that will shape improvements within a future healthcare context with often countervailing pressures. Dietitians have a fundamental role in evolving collaborative

leadership and directing transformational change towards greener healthcare to address the net zero agenda.

Acknowledgements

This study was made possible via an internal XXXX Arts/Health Collaborative award and additional pump priming funds made available via the XXXX. We would like to acknowledge the time taken by AHP leaders and future leader out of their very busy professional practice and training schedules to participate in interviews or focus groups. Thanks to YYYY (MSc graduate) for supporting the final formatting of the manuscript

Biographies

Removed for anonymity

REFERENCES

1. NHS. National Ambition 2020 [22/1/23]. Available from: <https://www.england.nhs.uk/greenemhs/national-ambition/>.
2. NHS. UK becomes first major economy to pass net zero emissions law 2019 [19/1/23]. Available from: <https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law>.
3. NHS. Greener Allied Health Professionals Hub: NHS; 2021 [19/1/23]. Available from: <https://www.england.nhs.uk/ahp/greener-ahp-hub/>.
4. AHP. The Allied Health Professions (AHPs) Strategy for England 2022 [23/1/23]. Available from: <https://www.england.nhs.uk/wp-content/uploads/2022/06/allied-health-professions-strategy-for-england-ahps-deliver.pdf>.
5. Shaw E, Walpole S, Mclean M, Alvarez-Nieto C, Barna S, Bazin K, et al. AMEE Consensus Statement: Planetary health and education for sustainable healthcare. *Medical Teacher*. 2021;43(3):272-86.
6. Pettinger C. Sustainable eating: opportunities for nutrition professionals. *Nutr Bull*. 2018; 43(3): 226–237.
7. Carlsson L, Mehta K, Pettinger C. Chapter 7: Critical dietetics and sustainable food systems. In: J Coveney, S Booth, editors. *Critical dietetics and critical nutrition studies*. Switzerland: Springer; 2019. p. 97.
- 7.5 Wright KC (2021) Sustainability and Planetary health *Today's Dietitian*, 23, 8, p32 Available at: <https://www.todaysdietitian.com/newarchives/1021p32.shtml>
8. BDA. Environmentally Sustainable Diets Policy Statement 2021 [23/1/23]. Available from: <https://www.bda.uk.com/resource/sustainable-diets.html#:~:text=The%20BDA%20believes%20that%3A&text=high%2Dquality%20diet%20that%20is,environmentally%20sustainable%20and%20varied%20diet>.
9. BDA. One Blue Dot - the BDA's Environmentally Sustainable Diet Project 2018 [23/1/23]. Available from: <https://www.bda.uk.com/resource/one-blue-dot.html>.
10. Ashworth A, Cowper V, Griffin R, Holman D, Lowes L, Tancock D, et al. Appropriate prescribing of oral nutritional supplements using dietetics outcomes. *Clinical Nutrition*. 2020:208-52.
11. DHSC. Report of the independent review of NHS hospital food. Department of Health and Social Care; 2020.

12. PHE, NHS. Making every Contact Count (MECC): Consensus statement. 2016.
13. Carlsson L, Callaghan E. The Social License to Practice Sustainability: Concepts, Barriers and Actions to Support Nutrition and Dietetics Practitioners in Contributing to Sustainable Food Systems. *Journal of Hunger & Environmental Nutrition*. 2022:1-19.
14. Watts G, Battarbee RW, Bloomfield JP, Crossman J, Daccache A, Durance I, et al. Climate change and water in the UK – past changes and future prospects. *Progress in Physical Geography: Earth and Environment*. 2015;39(1):6-28.
15. Sterling S. *The Future Fit Framework: An Introductory Guide to Teaching and Learning for Sustainability in HE*. . The Higher Education Academy, York; 2012.
16. QAA. Education for Sustainable Development 2021 [23/1/23]. Available from: <https://www.qaa.ac.uk/the-quality-code/education-for-sustainable-development>.
17. UN. Transforming our world: the 2030 Agenda for Sustainable Development 2015 [Available from: <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N15/291/89/PDF/N1529189.pdf?OpenElement>].
18. Kramer MW, Crespy DA. Communicating Collaborative Leadership. *The Leadership Quarterly*. 2011;22(5):1024-37.
19. Beirne M. The reforming appeal of distributed leadership. *British Journal of Healthcare Management*. 2017;23(6):262-70.
20. Silverman D. *Doing Qualitative Research-A practical Handbook*: SAGE Publications; 2005.
21. Swift JA, Tischler V. Qualitative research in nutrition and dietetics: getting started. *Journal of Human Nutrition and Dietetics*. 2010;23(6):559-66.
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):77-101.
23. Etikan I. Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*. 2016;5(1):1.
24. NHS. The 14 Allied Health Professionals 2022 [23/1/23]. Available from: <https://www.england.nhs.uk/ahp/role/>.
25. Archibald MM, Ambagtsheer RC, Casey MG, Lawless M. Using Zoom Videoconferencing for Qualitative Data Collection: Perceptions and Experiences of Researchers and Participants. *International Journal of Qualitative Methods*. 2019;18:160940691987459.

26. Pilnick A, Swift JA. Qualitative research in nutrition and dietetics: assessing quality. *Journal of Human Nutrition and Dietetics*. 2011;24(3):209-14.
27. QSR. NVivo Version 12 Pro: QSR International Pty Ltd.; 2018 [23/1/23]. Available from: <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>.
28. Kiger ME, Varpio L. Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*. 2020;42(8):846-54.
29. Nowell LS, Norris JM, White DE, Moules NJ. Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*. 2017;16:1-13.
30. Richardson L, St. Pierre EA. *Writing: A Method of Inquiry*. The Sage Handbook of Qualitative Research. 3rd ed: SAGE Publications; 2005. p. 959-78.
31. Varpio L, Ajjawi R, Lynn VM, O'Brein BC, Rees CE. Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. *Medical Education*. 2017;51(1):40-50.
32. Braun V, Clarke V. Thematic analysis. *APA Handbook of Research Methods in Psychology, Vol 2: Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological*. 2: American Psychological Association; 2012. p. 57-71.
33. Byrne D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*. 2021;56(3):1391-412.
34. Storey J, Holti R. Towards a New Model of Leadership for the NHS: NHS Leadership Academy; 2013 [23/1/23]. Available from: https://www.leadershipacademy.nhs.uk/wp-content/uploads/dlm_uploads/2014/10/Towards-a-New-Model-of-Leadership-2013.pdf.
35. Cameron A, Robinson M, Pickles K. NHS Sustainable Development Unit Study. *Enventure Research*; 2017.
36. Ashcroft T, Davies L, Taylor S, Boydell-Smith A, Gresty M. Net Zero Leadership Implications and Innovas. 2022.
37. HCPC. Continuing Professional Development 2020 [23/1/23]. Available from: <https://www.hcpc-uk.org/cpd/>.
38. NHS. The NHS Long Term Plan 2019 [23/1/23]. Available from: <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf>.
39. NHS. Using Online Consultations in Primary Care-Implementation Toolkit. 2020.

40. Holdsworth LK, Douglas L, Hunter E, McDonald C. Social media: raising the profile of AHPs. *British Journal of Healthcare Management*. 2013;19(2).
41. Knight A, Baldwin C, Reidlinger DP, Whelan K. Communication skills teaching for student dietitians using experiential learning and simulated patients. *Journal of Human Nutrition and Dietetics*. 2021;33(5):601-13.
42. Boak R, Palermo C, Gallegos D. Towards 2030: Re-imagining the Future of Nutrition and Dietetics in Australia and New Zealand. 2021.
43. Alberdi G, Begiristain-Zubillaga M. The Promotion of Sustainable Diets in the Healthcare System and Implications for Health Professionals: A Scoping Review. *Nutrients*. 2021;13(3):747.
44. BDA. A curriculum Framework for the pre-registration education and training of Dietitians. British Dietetics Association; 2020 [23/1/23]. Available from: <https://www.bda.uk.com/uploads/assets/939f176b-8999-44f4-8c30a725baa7df28/BDACurriculum2020FINAL0505PRINT.pdf>.
45. RCOT. Professional standards for occupational therapy practice, conduct and ethics. Royal College of Occupational Therapists; 2021.
46. BDA. Driving Dietetics forward together, Strategic plan 2021-2024: British Dietetics Association; 2022 [23/1/23]. Available from: <https://www.bda.uk.com/uploads/assets/0ad8979a-286e-448a-867c4f8e78c602d4/8f974379-7ade-41bd-9bbc753acacad1c3/StrategicPlan21-24OnePageFINAL.pdf>.
47. Denniston C, Molloy E, Nestel D, Woodward-Kron R, Keating JL. Learning outcomes for communication skills across the health professions: a systematic literature review and qualitative synthesis. *BMJ Open*. 2017;7(4):e014570.
48. Wegener J. Equipping Future Generations of Registered Dietitian Nutritionists and Public Health Nutritionists: A Commentary on Education and Training Needs to Promote Sustainable Food Systems and Practices in the 21st Century. *Journal of the Academy of Nutrition and Dietetics*. 2018;118(3):393-8.
49. Wegener J, Fong D, Rocha C. Education, practical training and professional development for public health practitioners: a scoping review of the literature and insights for sustainable food system capacity-building. *Public Health Nutrition*. 2018;21(9):1771-80.
50. Winter J, Cotton D, Hopkinson P, Grant V. The university as a site for transformation around sustainability. *International Journal of Innovation and Sustainable Development*. 2015;9(3/4):303.

51. Warwick P, Miller W, Morgan A. The Pursuit of Compassionate Hope: Repurposing the University Through the Sustainable Development Goals Agenda. 2019.
52. Sterling S. Assuming the future: repurposing education in a volatile age. In: B Jickling, S Sterling, editors. Post-Sustainability and Environmental Education. *Palgrave Studies in Education and the Environment*. Cham: Palgrave Macmillan; 2017. p. 31-45
- Pettinger C, Atherton E, Miller W. Engaging student dietitians in 'sustainability principles' throughout the curriculum: an exploratory pedagogic workshop. *J Hum Nutr Diet*. 2018; **31**: 48-49
53. Tun MS. Fulfilling a new obligation: Teaching and learning of sustainable healthcare in the medical education curriculum. *Medical Teacher*. 2019;41(10):1168-77.
54. Miller E, Castellanos CA. O10 Incorporating Experiential-Learning and Reflection Related to Sustainable Food Systems in an Undergraduate Dietetic Course. *Journal of nutrition Education and Behaviour*. 2022;54(7S):S6.
55. Richardson J, Grose J, Bradbury M, Kelsey J. Developing awareness of sustainability in nursing and midwifery using a scenario-based approach: Evidence from a pre and post educational intervention study. *Nurse Education Today*. 2017;54:51-5.
56. Sterling S. Assuming the Future: Repurposing Education in a Volatile Age. *Post-Sustainability and Environmental Education* 2017. p. 31-45.
57. Halvorsen K, Dihle A, Hansen C, Nordhaug M, Jerpseth S, Tveiten S, et al. Empowerment in healthcare: A thematic synthesis and critical discussion of concept analyses of empowerment. *Patient Education and Counseling*. 2020;103(7):1263-71.
58. West M. *Compassionate Leadership: Sustaining wisdom, humanity and presence in health and social care*: The Swirling Leaf Press; 2021.
59. Wyborn C, Datta A, Montana J, Ryan M, Leith P, Chaffin B, et al. Co-Producing Sustainability: Reordering the Governance of Science, Policy, and Practice. *Annual Review of Environment and Resources*. 2019;44(1):319-46.
60. Hawkins IW, Balsam AL, Graves D. A Qualitative Study of How Registered Dietitians Made the Connection Between Diet, Climate Change, and Environmental Degradation. *Journal of Hunger & Environmental Nutrition*. 2015;10(1):47-59.
61. Cavazzoni F, Fiorini A, Veronese G. How Do We Assess How Agentic We Are? A Literature Review of Existing Instruments to Evaluate and Measure Individuals' Agency. *Social Indicators Research*. 2022;159(3):1125-53.

62. Hickson M, Child J, Collinson A. Future Dietitian 2025: informing the development of a workforce strategy for dietetics. *Journal of Human Nutrition and Dietetics*. 2018;31(1):23-32.
63. Higgins M, Strother H, Burkhart S, Carlsson L, Meyer NL, Spiker M, et al. Sustainable food systems and diets in dietetic training standards: an international content analysis. *Journal of Human Nutrition and Dietetics*. 2022.
64. NHS. Delivering a 'Net Zero' National Health Service. NHS England; 2022.
65. Hristov I, Chirico A. The Role of Sustainability Key Performance Indicators (KPIs) in Implementing Sustainable Strategies. *Sustainability*. 2019;11(20):5742.
66. Dolatabad AH, Mahdiraji HA, Babgohari AZ, Garza-Reyes JA, Ai A. Analyzing the key performance indicators of circular supply chains by hybrid fuzzy cognitive mapping and Fuzzy DEMATEL: evidence from healthcare sector. *Environment, Development and Sustainability*. 2022.
67. Madden DL, Mclean M, Brennan M, Moore A. Why use indicators to measure and monitor the inclusion of climate change and environmental sustainability in health professions' education? *Medical Teacher*. 2020;42(10):1119-22.
68. Mortimer F, Isherwood J, Pearce M, Kenward C, Vaux E. Sustainability in quality improvement: measuring impact. *Future Healthcare Journal*. 2018;5(2):94-7.
69. Mortimer F, Isherwood J, Wilkinson A, Vaux E. Sustainability in quality improvement: redefining value. *Future Healthcare Journal*. 2018;5(2):88-93.
70. Oliver K, Kothari A, Mays N. The dark side of coproduction: do the costs outweigh the benefits for health research? *Health Research Policy and Systems*. 2019;17(1).
71. Kline R. Leadership in the NHS. *BMJ Leader*. 2019;3(4):129-32.
72. Robertson R, Wenzel L, Thompson J, Charles A. Understanding NHS Financial Pressures: How are they affecting patient care: The King's Fund; 2017 [23/1/23]. Available from: https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/Understanding%20NHS%20financial%20pressures%20-%20full%20report.pdf.
73. SOS. Sustainability Skills Survey 2021-2022: Students Organising for Sustainability; 2022 [23/1/23]. Available from: https://uploads-ssl.webflow.com/6008334066c47be740656954/62de805cb0d9030a96c6e88a_20220125_SO S-UK%20Sustainability%20Skills%202021-22%20-%20HE%20only%20-%20FINAL.pdf.

74. Violato E, Witschen B, Violato E, King S. A behavioural study of obedience in health professional students. *Advances in Health Sciences Education*. 2022;27(2):293-321.
75. Parkin S. *The Positive Deviant: Sustainability Leadership in a Perverse World*. 1 ed: Routledge; 2010. 336 p.
76. Burns H, Diamond-Vaught H, Bauman C. Leadership for Sustainability: Theoretical Foundations and Pedagogical Practices that Foster Change. *International Journal of Leadership Studies*. 2015;9(1).
77. Ferdig MA. Sustainability Leadership: Co-creating a Sustainable Future. *Journal of Change Management*. 2007;7(1):25-35.
78. O'Donovan R, Rogers L, Khurshid Z, De Brún A, Nicholson E, O'Shea M, et al. A systematic review exploring the impact of focal leader behaviours on health care team performance. *Journal of Nursing Management*. 2021;29(6):1420-43.
79. Sharp C. Collective Leadership: Where Nothing is Clear and Everything Keeps Changing 2018 [23/1/23]. Available from: <https://www.humanlearning.systems/uploads/collectiveleadershipreport1.pdf>.
80. Careau E, Biba G, Brander R, Van Dijk JP, Verma S, Paterson M, et al. Health leadership education programs, best practices, and impact on learners' knowledge, skills, attitudes, and behaviors and system change: a literature review. *Journal of Healthcare Leadership*. 2014:39.
81. Mckimm J, Mclean M. Rethinking health professions' education leadership: Developing 'eco-ethical' leaders for a more sustainable world and future. *Medical Teacher*. 2020;42(8):855-60.
82. Care O, Bernstein MJ, Chapman M, Diaz Reviriego I, Dressler G, Felipe-Lucia MR, et al. Creating leadership collectives for sustainability transformations. *Sustainability Science*. 2021;16(2):703-8.
83. WRAP. Preventing Waste in the Healthcare Sector 2021 [23/1/23]. Available from: <https://wrap.org.uk/resources/report/preventing-waste-healthcare-sector#download-file>.
84. Dimpleby H. National Food Strategy Independent Review: The Plan: National Food Strategy; 2021 [23/1/23]. Available from: file:///Users/paridhigarg/Downloads/1669_NFS_The_Plan_July21_S11.pdf.
85. Andrade C. The Inconvenient Truth About Convenience and Purposive Samples. *Indian Journal of Psychological Medicine*. 2021;43(1):86-8.

Formatted: EndNote Bibliography

Deleted: ¶