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How staff training can improve perceptions and knowledge on waste management in dentistry.

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Introduction

The Royal College of Surgeons Ireland suggests that implementation of sustainable waste practices within dentistry is a small but significant step to tackle the profession's environmental burden. Poor waste segregation can lead to increased atmospheric methane gas which is one of the largest contributors to climate change.

Objectives

To measure staff perceptions/ knowledge on health-care waste management.
To improve staff knowledge of appropriate waste management in dentistry and their understanding of the environmental impact of incorrect disposal of dental waste.

Methods

Within a UK secondary care dental hospital setting, a questionnaire was issued to staff to ascertain current knowledge and opinions on dental waste management. Several methods aiming to improve staff knowledge were implemented prior to issuing a second survey.

Results

Of initial respondents, 73% answered that they think about environmental sustainability daily/ weekly. However, 56% lacked confidence in their knowledge of waste segregation. They perceived the biggest health-care contributors to carbon footprint were lack of recycling facilities, patient/ staff travel and plastic disposal. Following teaching, 95% of those who attended had increased knowledge and awareness.

Conclusions

This project highlighted that many dental staff do not feel that they have appropriate training on correct waste management as part of their induction. The benefits of improving staff knowledge on the sustainable waste practices, cannot be under-estimated due to growing global concern of climate change. This project has highlighted that teaching led to improvement in staff knowledge and confidence.

INTRODUCTION

Climate change is a global crisis and is one of the major threats to human health. It has caused rising temperatures, which have led to an increase in mortality, reduced biodiversity within many species, and acidification of oceans.¹ One of the main contributors to this is human activity and associated waste production, with 40 billion tonnes of man-made carbon dioxide (CO₂) released globally in 2021.² In a questionnaire of public perception in 50 countries, it was reported that 64% of people believe climate change is a global emergency.³ The global annual production of municipal solid waste is two billion tonnes, and by 2050, this is expected to rise to three billion tonnes.⁴ The breakdown of waste results in release of the potent greenhouse gas (GHG) methane (CH₄). While there has been increased pressure

from governments and societal bodies to reduce the atmospheric release of CO₂, the effects of CH₄ have been overlooked, although it has been reported to be more potent and contributes to around one-third of global warming.⁴

In 2023, the Environmental Protection Agency (EPA) reported that Ireland's GHG emissions were around 55 million tonnes of CO₂ equivalent.⁵ Although this is a 6.8% reduction from 2022, the population in Ireland is estimated to grow to 5.5 million in 2030 and to 6.2 million in 2050. As the emission of GHGs is directly related to human activity, there is still a need to reduce emissions significantly. The National Health Service in England produces 22.8 million tons of carbon emissions annually, which equates to 2% of the carbon footprint of the whole country; equivalent services in the USA and Austria are 10% and 7%, respectively.⁶

Dentistry is resource heavy, with a considerable negative environmental impact.⁷ Contributing factors include waste disposal (namely plastics), inappropriate use of electricity, transportation of materials, and patient/staff travel. This article will discuss a recent project that primarily focused on improving dental staff knowledge on waste management.

Waste from landfill may result in bacterial breakdown of municipal soil resulting in release of GHGs such as CH₄ and CO₂. In Ireland, the overall CH₄ emissions from landfill sites peaked at 2,461 kilotons CO₂ equivalent in 2009 and have reduced by 29% from reports in 2018. However, with a need for further reduction, the Waste Framework Directive has set a target, by 2025, to recycle and prepare for reuse 55% of municipal waste.⁸

Waste management guidance⁹ states that those involved in waste disposal should ensure that waste segregation should “promote high quality recycling”. The benefits of recycling include reduced demand on raw materials, and less need for landfill disposal of waste. Recycling can be low cost, if efficiently and effectively managed. Poor waste segregation can lead to non-clinical waste being disposed of in the clinical waste stream, increasing the overall cost and potentially causing harm to the environment from incineration.⁹

It is estimated that up to half of clinical waste contents are incorrectly disposed of¹⁰; therefore, by increasing staff knowledge on appropriate waste segregation, this should not only cut costs but have a less detrimental environmental impact.

The aim of this paper is to provide a short overview of the impact of incorrect dental waste disposal on the environment and discuss a recent quality improvement project conducted within a secondary care dental setting, which aimed to:

1. Measure staff perceptions/knowledge on healthcare waste management.
2. Improve overall understanding of appropriate waste disposal practices.

In completing this project, the barriers to implementation of change within the workplace were also considered.

BACKGROUND

Dental waste falls into three categories: non-clinical; clinical; and, energy waste. Hazardous clinical waste requires specialised heat treatment/incineration to render it safe before disposal; however, this contributes a small proportion of overall healthcare waste. Non-clinical waste makes up 75-90%¹¹ of all healthcare waste, and many of the disposed-of items are recyclable. However, due to challenges with recycling facilities within healthcare settings, these items often end up in landfill or are incinerated instead. Incineration results in the emission of GHGs such as CO₂ and nitrogen oxides, which contribute to rising global temperatures and air pollution. Air pollution is the biggest environmental health risk in Europe, contributing to more than 400,000 premature deaths each year, and it has been re-

ported that one in eight deaths are linked to pollution.¹² In attempting to tackle this problem, recent guidance by the EU has stated that by 2030, carbon emissions in Ireland should have reduced by up to 30% compared to 2005 levels.¹³

Dental waste places a huge burden on environmental sustainability.⁷ One of the initiatives to aid promotion of appropriate waste management within dentistry is ‘Reduce, Reuse, Recycle and Rethink’:

- Reduce: Reducing the demand for dental care and resources by prevention will ultimately reduce the volume of waste produced.
- Reuse: A reduction in the use of single-use equipment, which is often used out of convenience. The Covid-19 pandemic led to an increase in the use of single-use personal protective equipment (PPE). For example, disposable face visors have been reported to release five times more CO₂ equivalent emissions and three times more fossil fuels than the reusable equivalent.¹⁴
- Recycle: Recycling benefits include reduced demand on landfill and ultimately reduced production of GHGs.
- Rethink: Stakeholders are encouraged to adopt a unified and collaborative approach to review and improve waste disposal. As a profession, we should embed sustainable practices within the workplace as we have a duty to care for our patients’ holistic well-being as well as their oral health.¹⁵

Wilson *et al.* recommended that improving education on waste management should start at undergraduate level with compulsory training as part of the curriculum.¹⁵ Public awareness of climate change has peaked; however, this is not emulated within dental training. Dental professionals have a duty of care to keep up to date with current practices and regulations, and this should include appropriate waste segregation. It is our hope that this project highlights the benefits of improving staff knowledge in clinical waste disposal as a first step in tackling the global environmental crisis.

AIMS

The aim of this project was to gauge current staff knowledge of appropriate healthcare waste segregation within a Glasgow dental hospital and school. It was then hoped to improve staff knowledge and understanding in the following areas:

1. appropriate waste management; and,
2. the environmental impact of incorrect waste disposal.

MATERIALS AND METHODS

Approval for this project was gained locally from the Clinical Governance Committee. No ethical approval was required as this project was gauging staff perceptions only. All clinical, radiology and laboratory staff within the sec-

ondary care dental hospital setting were invited to participate. Information regarding the survey was emailed to all staff and participation was voluntary. Departments that agreed to participate included orthodontics, restorative, paediatric, radiology, oral surgery, oral medicine, and the laboratories.

A 17-question online questionnaire ([Appendix 1](#)) was issued to all participants to gauge staff knowledge on sustainability. Participants were given three weeks to complete the survey between January 15, 2024, and February 5, 2024. Following an arranged meeting with the Head of Sustainability for the health board to discuss methods for improving staff knowledge, the following was planned:

1. Showcase of posters to promote a recent sustainability campaign launched locally within the health board.
2. In-person teaching from the local health board sustainability team and committee.
3. Pop-up stall to improve staff engagement and promote sustainable practices.

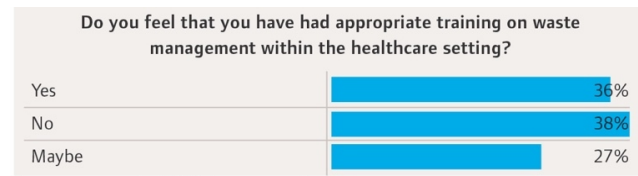
A pop-up stall was set up within the hospital by the local sustainability team. This was well received and allowed staff members to engage with the sustainability team, receive written information and ask questions. Teaching was delivered in person on two occasions and, immediately following this, attendees were asked to complete a second online questionnaire ([Appendix 2](#)) to ascertain if knowledge had improved.

RESULTS

The initial survey was issued to 388 staff including dental nurses, dental trainees, registrars, healthcare support workers, administrative staff, consultants, and university staff. The total number of responses was 135, providing a response rate of 35%.

From this, 73% answered that they think about sustainability daily or weekly, indicating the importance of sustainability to our staff members. Additionally, 32% were unaware of the cost implications of the disposal of healthcare waste, while 38% felt that they had not had appropriate training on waste management within the healthcare setting ([Table 1](#)). Of those who answered no to this question, most found that online modules (elearning) would be the most useful form of learning, followed by information sheets (posters) and face-to-face teaching. When asked what staff felt was the biggest contributor to the carbon footprint within the NHS, there were several responses, including waste disposal and lack of recycling (12%), disposal of single-use items (8%), and patient and staff travel (7%). Staff responses to current waste management efforts within the workplace are illustrated in [Table 2](#).

Regarding current confidence in knowledge of waste management in healthcare, participants were asked to rate themselves on a scale of one to ten. Some 56% answered one to four, indicating a lack of confidence. Only 5% answered 10 in terms of current confidence.



Percentages total >100% due to rounding.

Table 1. Initial survey – staff responses regarding their current level of training on waste management.



Table 2. Initial survey – staff responses to current waste management efforts within the workplace.

ROUND TWO FINDINGS

Following the teaching session and pop-up event, a second round of data was collected at an orthodontic staff meeting by an online questionnaire to ascertain if knowledge had improved. The survey was distributed to 109 participants with 70 responses, giving a response rate of 64%.

Some 95% of those who responded had increased knowledge and awareness of appropriate waste segregation. A total of 59% answered 'somewhat confident' regarding their current confidence/knowledge on waste management, and 30% answered 'extremely confident'. A total of 11% answered either 'neutral' or 'lacking confidence' and, reassuringly, no one answered 'extremely lacking confidence' ([Figure 1](#)). Some 77% felt that further teaching in the form of online learning would be useful to consolidate and revise knowledge.

In terms of future changes, 64% said that they would like more recycling bins within the secondary care setting, and some of the suggestions to further improve our sustainability practice included: dedicated sustainability teams within each department; and, the creation of a short step-by-step guide on what should be placed in each bin.

DISCUSSION

Although a seemingly high percentage of respondents (73%) answered that they think about sustainability regularly, the response rate to our survey was only 35% and therefore there may be an element of response bias. We are aware that this is a relatively low response rate and therefore the views may not be representative of all staff. Poor staff engagement may therefore be one of our barriers to implementation of new policies and procedures to improve sustainability practices within the hospital environment. Other barriers may include staff perception of the perceived

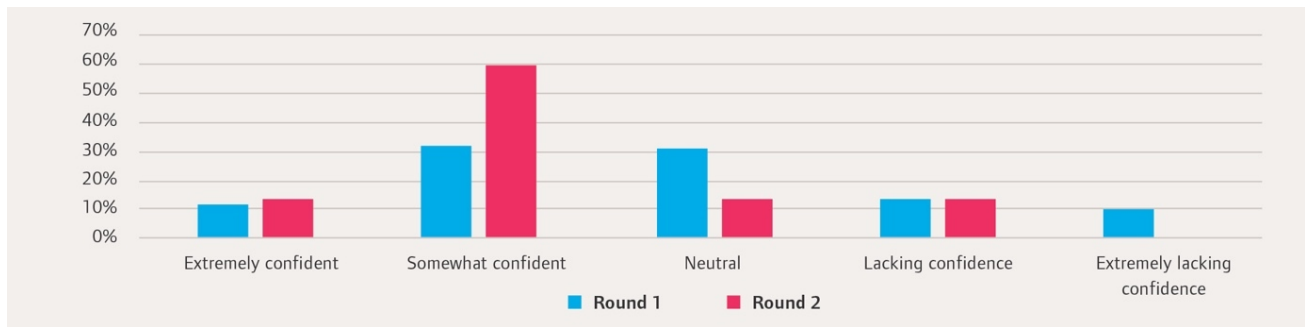


Figure 1. Confidence change in knowledge between first and second surveys.

scale and complexity of change, conflicting priorities and limited resources.¹⁶

To improve our response rate, we could have targeted staff at departmental meetings, advertised on social media platforms, and had various ways of accessing the questionnaire, i.e., QR codes displayed on posters and paper copies, as the use of multiple methods of distributing surveys has been shown to improve response rates.¹⁷ The survey was initially only emailed to all participating colleagues with an outline of the timeframe to complete. The use of personally addressed email reminders has been shown to increase survey response rates by up to 50% and a follow-up email close to the deadline may therefore have been beneficial. Questionnaires that are short, convenient and quick to complete have also been demonstrated to have a better response rate. The survey consisted of 17 questions, and this could likely be condensed to include only pertinent questions that yield clinically relevant information.¹⁷ One of the other limitations of this project relates to the lower distribution rate of the second survey. This was due to clinical commitments and timetabling, which limited the number of staff able to attend the in-person teaching. Some 109 staff attended the teaching, and the survey was completed by 70 people. By the time of the second survey, we were only able to deliver two teaching sessions due to logistical challenges; however, since then online modules are now available for staff to complete, which specifically focus on waste handling.

Within the initial survey, respondents were asked to choose from a list of options on how they would dispose of a variety of clinical items. Domestic stream was the most commonly selected answer, with 87% of people answering that they disposed of paper towels within domestic waste bags that are disposed of by incineration or in landfill. This was also the most answered for the disposal of drinks cans (72%), cardboard boxes (62%), wastepaper with no identifiable information (70%), and rinsed hand gel bottles (66%). This highlighted that several recyclable items are currently being disposed of in non-recyclable stream waste, and this has implications for both cost and carbon emissions, with 21kg of carbon emissions being released per tonne of domestic waste. While this is less than healthcare risk waste, there are items being disposed of within non-clinical waste that are 100% recyclable.

It has been reported that within our health board, 95% of waste classified as 'regular healthcare risk waste' is incorrectly disposed of. Healthcare waste results in 273kg of

carbon emissions per tonne of waste in comparison to 21kg for domestic waste, highlighting the detrimental effects of incorrect waste disposal. There are also cost implications to this, and nationally within Ireland, savings of between €800,000 and €1,300,000 could be made each year in acute hospitals by ensuring that only clinical waste is disposed of within the 'healthcare risk stream'.¹⁸ The teaching session prompted discussion on how we could encourage staff to use non-clinical waste stream or recycling where possible. Suggestions included reducing the number of clinical waste bins, increasing the number of recycling bins, improving staff knowledge with elearning, and ensuring that mandatory training in relation to appropriate waste management is completed as part of the induction process.

While this project was conducted within a UK hospital, the problems with incorrect waste disposal are also prevalent within Ireland. A study conducted in Ireland assessing the contents of healthcare risk waste bags found that 19% of the contents were obvious non-risk items (e.g., packaging). Some 15% of the bags were uncontaminated materials without any healthcare risk. In simple terms, the amount of healthcare waste can be reduced by staff knowing what should be disposed of in each waste stream.¹⁹ Within Ireland, the Waste Action Plan for a Circular Economy²⁰ outlines the roadmap for Ireland's waste management. Within the UK, the Health and Safety Executive published revised guidance in 2021 on the effective management of healthcare waste.²¹ Our local health board has outlined within their Climate Change and Sustainability Strategy, that by 2025, a maximum of 5% of all healthcare waste produced will result in landfill disposal and the recycling rate will increase to 70%.²² Broadly, the implemented EU waste policy is to improve waste management, promote recycling and limit disposal in landfills.²³

This project initially gauged staff knowledge on waste segregation; however, one of the biggest contributors to carbon footprint within healthcare is patient/staff travel.²⁴ This therefore poses the question: can some appointments be conducted remotely? The introduction of video consultations in 2020 due to the Covid-19 pandemic has led to increased acceptance of 'virtual appointments', with the benefits of convenience, avoiding time off work and school, and reduced travel. Although the acute implications of the pandemic have largely reduced, many believe that the continuation of remote consultations may overcome some of the barriers patients may face when accessing treatment. The

results of a recent audit carried out in the orthodontic department in Royal Blackburn Teaching Hospital confirmed that there is a high level of patient satisfaction with remote consultations, with 76% of patients saying that they found it more convenient than face to face. Furthermore, 66% also said that they would like more virtual appointments in the future.²⁵ In a study that aimed to understand patient/public perception of sustainability within dentistry, Baird *et al.* explored the compromises patients would be willing to make to have a positive impact on the environment. They found that patients are generally keen to make changes to improve sustainability within dentistry and would be willing to compromise on some aspects (time, cost, and accessibility) but not on factors such as dental health and aesthetics.²⁴ With this in mind, this may therefore raise questions among clinicians: are all of our face-to-face appointments necessary?; and, would there be a benefit (for both patients and environmentally) in moving towards a hybrid mix of in-person and video appointments?

CONCLUSIONS

The awareness of the public on the need to adopt more environmental practices is at an unprecedented level, which highlights the need to tackle these issues. However, professional awareness appears to be lower and there appears to

be disparity between personal responsibility to be more environmentally considerate and professional practices.²⁵

Climate change is one of the biggest threats to human health, and dental professionals should consider how appropriate waste management can reduce the environmental burden of the profession. This project highlighted that there appears to be a deficiency within dental training on appropriate waste segregation and management (38% of our initial survey responders felt that they had insufficient training).

By equipping staff with the appropriate resources and education, we hoped to encourage them to consider what changes can be made to their practice to be more sustainable. However, in ensuring that the professions' knowledge on sustainable practices, in particular appropriate waste management, is maintained and updated, we should consider other ways to provide teaching, e.g., mandatory induction modules and within the undergraduate curriculum. This project has made the first step in a secondary care setting by improving staff knowledge on: a) the impact of healthcare waste on carbon footprint; and, b) how to appropriately dispose of healthcare waste to minimise environmental impact.

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REFERENCES

1. European Commission. Consequences of climate change. Accessed January 9, 2025. https://climate.ec.europa.eu/climate-change/consequences-climate-change_en#:~:text=Higher%20temperatures%20can%20cause%20increased,geographical%20distribution%20of%20climate%20zones
2. Climate Now. CO₂-equivalent explained. Accessed January 9, 2025. <https://climatenow.com/video/co2-equivalent-explained/>
3. United Nations Development Programme. The People's Climate Vote. 2021. Accessed January 9, 2025. <https://www.undp.org/publications/peoples-climate-vote>
4. Hoy ZX, Woon KS, Chin WC, Van Fan Y, Yoo SJ. Curbing global solid waste emissions toward net-zero warming futures. *Science*. 2023;382(6672):797-800.
5. Environmental Protection Agency. Latest emissions data. Accessed January 9, 2025. <https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/#:~:text=In%202023%2C%20Ireland's%20GHG%20emissions,in%20emissions%20reported%20for%202022>
6. London Ambulance Service. London Ambulance Service Carbon Neutral Plan April 2022 – March 2025. Accessed January 9, 2025. <https://www.londonambulance.nhs.uk/about-us/our-plans-for-the-future/london-ambulance-service-carbon-neutral-plan-april-2022-march-2025/>
7. Mulimani P. Green dentistry: the art and science of sustainable practice. *Br Dent J*. 2017;222(12):954-961.
8. National Health Service Scotland. NHSScotland Waste Management Guidance (SHTN 03-01). Accessed January 9, 2025. <https://www.nss.nhs.scot/publications/nhsscotland-waste-management-guidance-shtn-03-01/>
9. NHS Greater Glasgow and Clyde. Watch your waste to clean up on costs. Accessed January 9, 2025. <https://www.nhsggc.scot/watch-your-waste-to-clean-up-on-cost>
10. World Health Organization. Safe management of wastes from health-care activities. Accessed January 9, 2025. https://apps.who.int/iris/bitstream/10665/85349/1/9789241548564_eng.pdf
11. World Economic Forum. 1 in 8 deaths in Europe are linked to pollution, says EU. Accessed January 9, 2025. <https://www.weforum.org/agenda/2020/09/carbon-emissions-european-union-health/#:~:text=Air%20pollution%20is%20the%20biggest,rates%20among%20COVID%2D19%20patients>
12. European Commission. 2030 climate targets. Accessed January 9, 2025. https://ec.europa.eu/ireland/news/ireland-s-eu-2030-emissions-targetspublished_en
13. Almutairi W, Saget S, McDonnell J, Tarnowski A, Johnstone M, Duane B. The planetary health effects of COVID-19 in dental care: a life cycle assessment approach. *Br Dent J*. 2022;233(4):309-316. doi:10.1038/s41415-022-4906-2
14. Wilson GJ, Shah S, Pugh H. What impact is dentistry having on the environment and how can dentistry lead the way? *Faculty Dent J*. 2020;11(3):110-113. doi:10.1308/rcsfdj.2020.96
15. Tappen RM, Wolf DG, Rahemi Z, et al. Barriers and facilitators to implementing a change initiative in long-term care using the INTERACT® Quality Improvement Program. *Health Care Manag (Frederick)*. 2017;36(3):219-230. doi:10.1097/HCM.000000000000168
16. Green Healthcare. Healthcare Risk Waste. Accessed January 9, 2025. <https://www.hse.ie/eng/about/who/healthbusinessservices/national-health-sustainability-office/files/factsheet-on-healthcare-risk-waste.pdf>
17. Green Healthcare. Best Practice Guide Healthcare Risk Waste Reduction. Accessed January 9, 2025. <https://www.hse.ie/eng/about/who/healthbusinessservices/national-health-sustainability-office/files/best-practice-guide-on-healthcare-risk-waste-reduction.pdf>
18. Government of Ireland. *Waste Action Plan for a Circular Economy*. Ireland's National Waste Policy 2020-2025; 2020.
19. Health and Safety Executive. Management of healthcare waste. Accessed January 9, 2025. <https://www.hse.gov.uk/healthservices/healthcare-waste.htm>
20. NHS Greater Glasgow and Clyde. Climate Change and Sustainability Strategy 2023–2028. Accessed January 9, 2025. <https://www.nhsggc.scot/downloads/climate-change-and-sustainability-strategy-2023-2028/>

21. European Union. Waste and Recycling. Accessed January 9, 2025. https://environment.ec.europa.eu/topics/waste-and-recycling_en
22. Wosik J, Fudim M, Cameron B, et al. Telehealth transformation: COVID-19 and the rise of virtual care. *J Am Med Inform Assoc.* 2020;27(6):957-962.
23. Byrne E, Watkinson S. Patient and clinician satisfaction with video consultations during the COVID-19 pandemic: an opportunity for a new way of working. *J Orthod.* 2021;48(1):64-73.
24. Baird HM, Mulligan S, Webb TL, Baker SR, Martin N. Exploring attitudes towards more sustainable dentistry among adults living in the UK. *Br Dent J.* 2022;233(4):333-342.
25. Martin N, Mulligan S, Fuzesi P, Webb T, Baird H. Published 2020.

APPENDICES

Waste management survey - Initial

1. Which department are you in?

2. Do you feel that your workplace tries to be environmentally friendly?
1=strongly disagree 2=disagree 3=neutral 4=agree 5=strongly agree

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

3. How often do you think about sustainability within the workplace?

Daily, weekly, monthly, seasonal, yearly, never.

4. What do you think is the biggest contributor to healthcare carbon footprint?

[free text answer]

5. How confident do you feel on a scale of 0 to 10 with your current knowledge on waste management within healthcare? (0: extremely unconfident. 10: being extremely confident)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

6. Within your workplace, how environmentally friendly do you feel current practices are regarding waste segregation? (0: not environmentally friendly. 10: very environmentally friendly)?

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

7. Please elaborate on your answer from question 6.

[free text answer]

8. Do you find it difficult to dispose of waste correctly within your respective department?

☐ Yes ☐ No ☐ Sometimes

9. If answered yes or sometimes to the question above, what do you think is/are the cause(s) of this?

[Free-text answer]

10. Are there any problems regarding waste management in your department that may require solving? If applicable, could you suggest any solutions?

[Free text answer]

11. Are you aware of the cost implications of disposal of healthcare waste?

☐ Yes ☐ Somewhat " No ☐ Maybe

12. Do you feel that you have had appropriate training on waste management within the healthcare setting?

☐ Yes " No ☐ Maybe

13. If answered no, what would you find helpful?

☐ Modules ☐ Online teaching " In person teaching ☐ Information sheets ☐ Other

14. Do you feel that there are enough recycling bins within your workplace?

☐ Yes " No ☐ Maybe

15. Please select how you currently dispose of each of the following items within the workplace within the bins available?

(a) paper hand towel, (b) drinks can, (c) clinical mask, (d) cardboard box, (e) wastepaper with no identifiable information, (f) hand-gel bottle (rinsed)

16. When purchasing a new material for clinical use, could you rank the following in order of importance to you as a healthcare worker? (1=most important, 8= least important)

Patient and staff safety, User friendly, Time efficient, Durability, environmentally friendly, Cheap/cost effective, Purchase source (local vs. international), Aesthetics.

17. Do you have any suggestions on how your workplace could do more to be more environmentally friendly/ reduce carbon footprint?

[Free text answer]

Appendix 1. Initial survey.

Follow-up Waste Management Survey

1. Following today's teaching, do you have increased knowledge and awareness of appropriate healthcare waste segregation?

" Yes ☐ Somewhat ☐ No

2. How confident do you feel with your current knowledge on waste management in healthcare?

☐ Extremely confident ☐ Somewhat confident
☐ Neutral ☐ Lacking confidence
☐ Extremely lacking confidence

3. Are you aware of the cost implications of healthcare waste disposal?

☐ Yes ☐ No ☐ Somewhat

4. Following the teaching, do you feel that you have had appropriate training on waste management?

" Yes ☐ No ☐ Somewhat

5. If no, what kind of further training would you find helpful?

☐ Online modules ☐ Online teaching
☐ Information sheets available ☐ Other

6. What changes would you like see within the hospital setting to improve sustainability?

[Free text answer]

7. Do you have any comments or feedback on the teaching session today?

[Free text answer]

8. Please give any suggestions for improvement on the teaching

[Free text answer]

Appendix 2. Follow-up survey.