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Citation: Heales, C. J., Ulett, P., Hancock, A. & Manning, F. (2025). 'No such thing as one size fits all': A survey of experiences of those with larger bodies in radiography. *Radiography*, 31(5), 103008. doi: 10.1016/j.radi.2025.103008

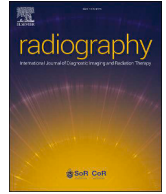
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Link to published version: <https://doi.org/10.1016/j.radi.2025.103008>

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'No such thing as one size fits all': A survey of experiences of those with larger bodies in radiography

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ARTICLE INFO

Article history:

Received 24 March 2025

Received in revised form

19 May 2025

Accepted 4 June 2025

Available online 17 June 2025

Keywords:

Radiography

Medical imaging

Radiotherapy

Larger bodies

Patient experience

Body size

Healthcare accessibility

ABSTRACT

Introduction: Individuals living in larger bodies face significant barriers when accessing healthcare, including both internal and external weight stigma. Within radiography, challenges such as inadequate equipment, accessibility limitations, and discomfort during procedures contribute to healthcare avoidance and poorer outcomes. This study investigates personal experiences of individuals living in larger bodies who have experienced radiographic services (medical imaging and radiotherapy) in the UK, with a focus on facilities, equipment, and accessories.

Methods: Following institutional ethical approval, a cross-sectional survey was distributed via social media. The anonymous survey collected demographic data and invited participants to describe their most impactful experience within radiographic services. Basic content analysis was conducted on short text responses; then aligned with key quantitative responses and included alongside the results for illustrative purposes. Public engagement representatives contributed to the study design, ensuring inclusivity and appropriate terminology.

Results: 92 participants completed the survey. The majority identified as female (79.3 %) and white (94.6 %), with ages ranging from 18 to 85 years. Most respondents (98.9 %) had experience with medical imaging, while 16.3 % had undergone radiotherapy. Key challenges included inadequately sized hospital gowns (55.3 %), chairs with armrests limiting accessibility, and a lack of adjustable imaging equipment for taller individuals. Humiliation and discomfort were frequently reported, particularly regarding ill-fitting gowns in public settings. Unlike medical imaging, radiotherapy participants did not report significant equipment-related concerns.

Conclusion: This study highlights the impact of inadequate radiographic equipment on individuals living in larger bodies, with both practical and emotional consequences.

Implications for practice: Findings suggest a need for improved accessibility to appropriately sized equipment and staff training to enhance patient experiences. Future research should explore emotional impacts and staff challenges to develop inclusive healthcare practices.

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Introduction

There are barriers to accessing healthcare when living in a larger body. These include weight stigma which can be experienced as external stigma where individuals experience negative attitudes from others, and/or internalized weight stigma, where individuals accept the stereotypes as true about themselves.^{1,2} This, combined with negative attitudes from healthcare providers^{3–5} can result in healthcare avoidance, as well as stress, reduced compliance and poorer health outcomes.^{6–11}

Within radiography it is accepted that there are technological challenges when undertaking medical imaging on patients with larger bodies^{12,13} together with associated ionising radiation dose considerations,¹⁴ although solutions are being identified.^{15–18} Likewise, challenges associated with the delivery of radiotherapy have also been described.^{19,20} It is also known that issues such as chairs not being able to accommodate larger bodies²¹ through to limitations on the diagnostic tests available to such individuals¹⁸ such as access to magnetic resonance imaging (MRI) may all contribute to embarrassment and stress for the individual.⁵ However, there is currently a scarcity of literature relating to the experiences of people living with larger bodies who undergo radiotherapy treatments and medical imaging procedures. The aim of this study was to investigate personal experiences as reported by individuals living within larger bodies who have

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undergone radiographic services (medical imaging and radiotherapy) as an adult within the United Kingdom (UK). This paper, the first in a series, focuses on the practical aspects reported by participants relating to facilities, equipment, and accessories.

Methods

Institutional ethical approval was achieved (reference 1870378). A cross-sectional survey was designed and prepared using Microsoft Forms.

Survey design

The survey was designed by the research team (FM, AH and CH) based on the research aim. The first section of the questionnaire contained questions relating to eligibility criteria and informed consent. The survey was anonymous with sufficient demographic data obtained to enable an assessment of the representativeness of respondents. Based on background literature, discussion with members of the Patient and Public Involvement and Engagement (PPIE) group and clinical observations of the research team, questions on experience were focused on experience of procedure, staff and longer-term impacts as well as utilities and equipment. These questions were then related to either medical imaging or radiotherapy to gather similar data from each.

Categories such as age, educational level and geographic location required participants to select from a pre-defined drop-down menu. Other categories, including sex and/or gender and description of body size were free text so that participants could use terms they were comfortable with as a means of encouraging participation. Numerical values for weight and height were not required. Remaining questions required either a 'yes/no' or a free text response. Respondents were asked whether they had experience of medical imaging and/or radiotherapy but were then asked to complete the remainder of the survey based on a single, most impactful, experience only. A copy of the questions capturing their experiences is provided as supplementary material 1. The survey was piloted with fellow academics as well as with members of the PPIE group for this project. Following the pilot, minor amendments were made to the wording of questions to ensure readability.

As it was recognised that some participants may find recounting their experiences distressing, a range of supportive resources were collated which could be accessed by respondents upon completion of the survey if they so chose. A standardised procedure relating to wellbeing and dissemination of resources was all put in place for researchers to follow should any participant contact them via email following completion of the survey.

Recruitment

Given that this is the first survey of its kind on this topic, and in the absence of existing data to inform a precise power calculation, a pragmatic sample size of 100 participants was selected. This figure was deemed sufficient to provide an initial exploratory insight into the subject area, while remaining feasible in terms of available resources and anticipated recruitment capacity. The survey was open for a two-month period with the option of a third month if the target sample size of 100 responses was not met. The survey was promoted via social media sites by researchers and PPIE representatives (X (formerly Twitter), Facebook, Instagram and TikTok) using a snowballing technique.

Eligibility criteria was: aged 18 or over, with personal experience of having undergone a medical imaging and/or radiotherapy procedure in the UK as an adult, and willingness to give consent for anonymous responses to the survey to be utilised for this research.

Patient and Public Involvement and Engagement

Engagement with members of the public throughout this project has been essential. Four contributed their expertise. All four representatives were White, 2 identified as female and 2 as non-binary, geographically they were in the Southeast (1), Central (2) and North (1) of England. All had previous experiences of medical imaging, but no representatives had experiences of radiotherapy.

The initial contribution of this PPIE group related to the topic of study, prior to questionnaire development, leading to the phrase 'living in a larger body' being utilised. Whilst the term 'fat' has been reclaimed as a neutral description of body size in activist spaces,²² this is not universally accepted and it was felt by the PPIE group to be important to avoid more medical descriptions relying on terms such as body mass index, overweight or obese. Through 1-to-1 discussions and email correspondence PPIE representatives also contributed to the study and survey design by providing feedback on the questionnaire design, public facing documentation submitted as part of the ethical approval process and funding application, as well as to recruitment methods and materials such as wording and imagery that was to be used on social media.

PPIE representatives also reviewed and provided feedback on the accompanying patient information, consent form, signposting resources (which directed individuals to external organisations or resources offering specific support or expertise), and recruitment literature.

Data analysis

Demographic data has been presented descriptively, with simple coding of themes (e.g. sex and/or gender, self-description of body size, ethnicity). For the purposes of this paper, affirmative responses to the key questions relating to impact of equipment and accessories have been identified and quantified with examples. Basic content analysis was conducted on the short text responses gained in the free text boxes; these are aligned with the key quantitative responses and are included alongside the results for illustrative purposes.

Results

Survey results

There were 101 responses, of which 92 participants completed the screening and consent section, and the remainder of the questionnaire. Of the 9 incomplete responses, 4 answered negatively to the question 'I consider myself as living in a larger body', 2 answered negatively to having had experience of medical imaging and/or radiotherapy and 3 did not feel they had any sufficient opportunity to consider the information or ask questions or receive answers via email. These respondents were not able to continue to the main questionnaire and are excluded from any further description and analyses.

Table 1 provides an overview of demographic data relating to size, age, geographical location, and educational level. The majority of respondents used terms that were grouped as larger than average ($n = 85$, 92.4 %), with 39 also using terms that indicated they were taller than average ($n = 39$, 42.4 %). 19 participants (21 %) described themselves as both larger and taller. Ages ranged from 18 to 85 years and the majority of respondents identified as female ($n = 73$, 79.3 %) and white ($n = 88$, 94.6 %). The sample were also generally well educated with 58 out of 92 (63.0 %) holding a bachelor's degree or higher.

Table 1
Respondent demographics.

Category	N = 92	%
Body shape		
Larger	85	92.4
Average	3	3.3
Smaller	4	4.3
Height		
Taller	39	42.4
Average	39	42.4
Smaller	14	15.2
Age		
18–25	7	7.6
26–35	23	25.0
36–45	22	23.9
46–55	13	14.1
56–65	18	19.6
66–75	5	5.4
76–85	4	4.3
Gender		
Female	73	79.3
Male	13	14.1
Non-binary	6	6.5
Location		
South West	19	20.7
South East	14	15.2
London	12	13.0
North West	11	12.0
North East	2	2.2
Wales	7	7.6
West Midlands	6	6.5
East of England	5	5.4
East Midlands	5	5.4
Yorkshire and the Humber	5	5.4
Scotland	4	4.3
Northern Ireland	2	2.2
Education level^a		
GCSE or equivalent	9	9.8
A level or equivalent	17	18.5
Level 4 and 5 NVQ or equivalent	8	8.7
Bachelors degree or equivalent	27	29.3
Masters degree or equivalent	25	27.2
Doctorate (PhD) or equivalent	6	6.5
Ethnicity^b		
White	88	94.6
Mixed heritage	2	2.2
Black	2	2.2

^a See supplementary material 2 for full definition.^b See supplementary material 3 for full list of terms and counts.

Fourteen participants (15.2 %) requested access to the signposting resources at the end of the survey.

Information was also collected about the reasons for referral to radiography services (Table 2). For Medical Imaging, 18 participants (21.1 %) provided more than one clinical indication. Musculoskeletal indications were most common (n = 36, 42.4 %) followed by gynaecological including pregnancy related ultrasound (n = 23, 27.1 %) and neurological indications (n = 20, 23.5 %). Other indications included cardiac, breast, dental, dermatology, gastro-intestinal, oncology, respiratory, rheumatology, urology/renal, vascular, and long Covid. For Radiotherapy, pelvic area treatment was most common (n = 5, 71.4 %).

Table 2. Referral reasons

Ninety-one participants (98.9 %) had experience of medical imaging and 15 (16.3 %) of radiotherapy, meaning 14 (15.2 %) had had experience of both. 85 participants (92.4 %) elected to describe their medical imaging experience and 7 (7.6 %) their radiotherapy experience with 8 people who had experience of both forms of

Table 2
Response choice and referral indications (of which multiple options could be selected).

	N = 92	%
Experience of medical imaging	91	98.9
Experience of radiotherapy	15	16.3
Answered based on medical imaging^a	85	92.4
Musculoskeletal	36	42.4
Gynaecology	23	27.1
Neurology	20	23.5
Respiratory	8	9.4
Oncology	7	8.2
Cardiovascular	4	4.7
Rheumatology	2	2.4
Other ^b	7	8.4
Answered based on radiotherapy	7	7.6
Pelvic area	5	71.4
Chest	1	1.1
Breast	1	1.1

^a See supplementary material 2 for full option definition.^b See supplementary material 3 for full list of terms and counts.

radiography describing their medical imaging rather than radiotherapy experience as shown in Fig. 1.

Medical imaging experience

Of the 85 respondents describing their medical imaging experience 54 (63.5 %) felt that the availability of general equipment and accessories (such as waiting room chairs, gowns etc.) was impacted in some way due to their body size and/or shape. Fig. 2 shows the responses given in order of decreasing frequency. Participants expanded on their choice in the free text box which accompanied this question highlighting the impact on people who are taller as well as larger.

A common response to patients by healthcare practitioners was one of humour, however, this was not reciprocated by patients.

'I need 2 hospital gowns instead of 1 because they aren't big enough ... this became a standard joke every time I went between the staff who used to laugh about it ... only I don't find it very funny ...' (respondent 25)

'height measurement causes hilarity on the part of others and a sense of rejection for me - another reminder of how I don't fit!' (respondent 52)

Humiliation was mentioned frequently, especially relating to hospital gowns in busy environments.

'Hospital gowns don't fit properly which can be humiliating if you're in a busy environment' (respondent 29)

'The gown didn't meet up at the back which exposed me and made me feel vulnerable and embarrassed.' (respondent 40)

Availability or lack of alternatives was also discussed.

'Often there will be another option i.e. a chair without arms but I have to ask for it and then you have to go through the whole process of a practitioner either being annoyed with you or overly apologetic' (respondent 33)

'Very awkward. Nurse wasn't interested that the equipment wasn't adjustable for my height. Was made to feel it was my fault.' (respondent 63)

'Short delays whilst they found bed extensions for imaging equipment etc.' (respondent 62)

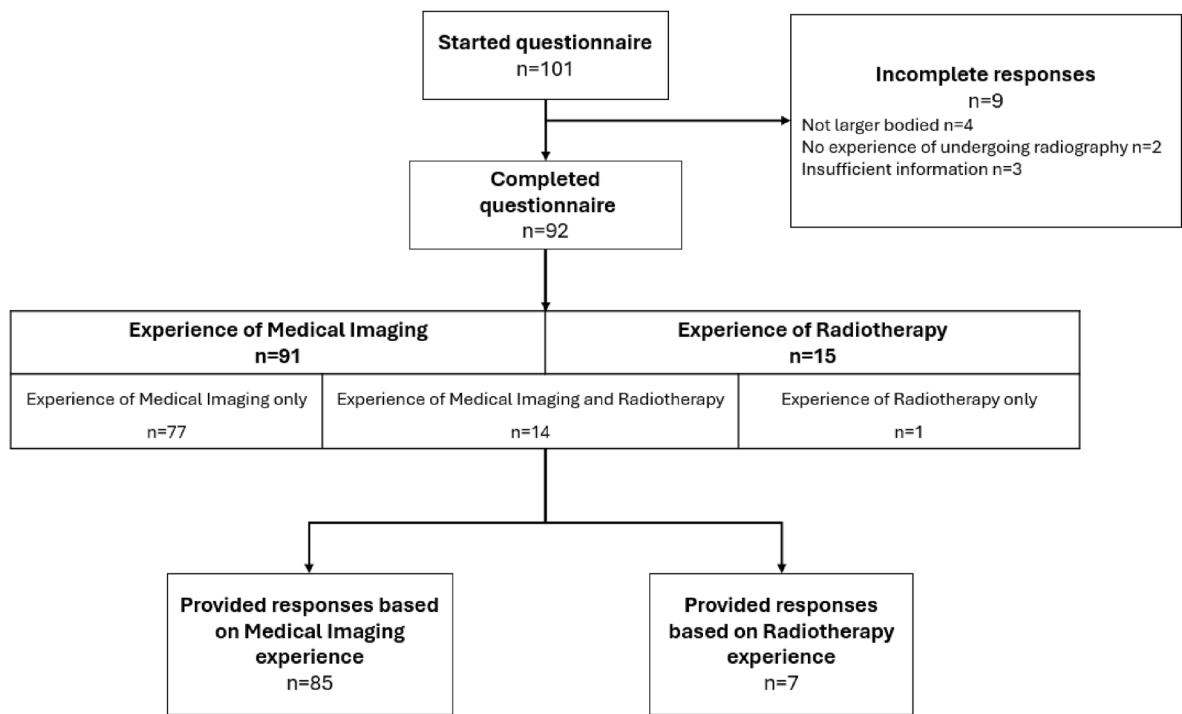


Figure 1. Participant flow chart
Fig. 1: Flowchart indicating the experiences reported on by participants.

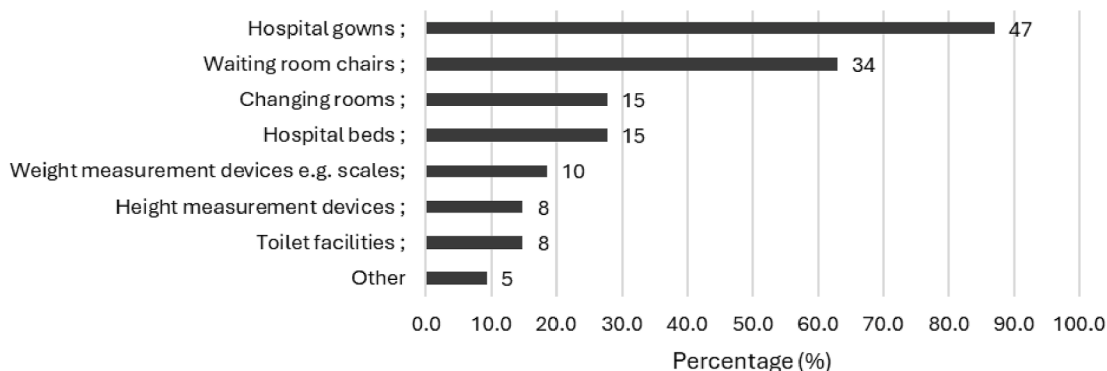


Figure 2. Ancillary equipment impacted by body size and/or shape
Fig. 2. Percentages and counts (data labels) of respondents (n = 54) who indicated the availability of suitable named equipment was impacted in some way due to body size and/or shape. The 'other' category included blood pressure cuff, MRI knee coil, dressing gowns.

Radiotherapy experience

Seven participants elected to provide feedback about their radiotherapy experience. Of the 7, none reported any impact relating to availability of general equipment and accessories (chairs, gowns etc.). When it came to moveable equipment and accessories (such as vacuum bags, thermoplastic shells, cushions), 3 respondents reported these being used, and none reported any concerns:

'Knee cushion used, was comfortable and appropriate and staff always checked I was comfortable.' (respondent 44)

Discussion

This study aimed to investigate the experiences of individuals living within larger bodies of radiographic services within the

UK, with results highlighting the widespread, primarily negative, impacts of facilities, equipment and accessories on patients. The demographic data collected was to provide insight into the diversity of the study population and it is noted that there is a spread in terms of age, education and geographical location although the majority of respondents described themselves as Female and White. Self-description was used for size as weight in particular can be interlinked with identity, meaning it is a complex and emotionally charged topic which can make it difficult to communicate about it.^{23,24} Medicalised terms such as 'obese' have been linked with increased feelings of shame,²⁵ whilst measures such as BMI are critiqued for their inaccuracy.²⁶ This research mirrors the sentiments expressed by our public engagement members during the development of this project, who felt that the use of the phrase 'larger body' was the best descriptor, and the self-description approach in the survey would offer a choice for respondents, reducing shame and triggering. Interestingly, and

arguably as a direct consequence of using the more open term of 'larger body', the study recruited a group of 'taller' individuals who may have otherwise been overlooked, providing insight into challenges that they also experience.

This study illustrates that larger and taller patients accessing radiography services are faced with a number of barriers which impact their experiences before they even begin their imaging or treatment. The most commonly issue was hospital gowns, with 47 respondents (55.3 %) indicating limitations. This was expressed by both taller and larger individuals, with the result leaving patients embarrassed, restricted or exposed. As one respondent stated, *'there is no such thing as one size fits all'*. Chairs were also a common issue for larger individuals, whether in waiting rooms or at bed-sides on the ward. Whilst chairs with armrests may increase safety and accessibility for older adults,²⁷ those with larger bodies find them limiting and at times painful. Further, when chairs without arms are present, respondents found them often already taken. This notion is supported by research which shows that 'sofas without armrests' are the most frequent choice for patients checking in and waiting to be called in their appointment.²⁸

The survey has also revealed that taller people encountered challenges relating to suitably sized equipment that is currently underreported in the literature. As illustrated by free text comments, taller individuals were often met with humour from staff when barriers arose, however, this created a sense of rejection or not belonging for the taller patients. This was a common theme with both taller and larger individuals, however, research on experience of taller people's day to day life illustrates that the uncontrollable nature of height and environmental barriers result in a type of 'unseen disability'.²⁹ Gender-specific issues with height were also reported, such as maternity unit tables being only 6 ft, with annoyance being observed in the healthcare practitioner when equipment was difficult to adjust for height. Generally, there is a lack of discussion within the evidence base of the challenges and experiences within the healthcare setting for taller individuals and further research is warranted.

The difference in response rate received for medical imaging and radiotherapy is reflective of the difference in the number of examinations carried out by each discipline. Using pre-pandemic data as the impact of Covid-19 and subsequent recovery plans and workforce challenges are likely to be impacting upon more recent activity, there were circa 114,000 radiotherapy episodes per annum performed in 2019,³⁰ compared with 44.9 million imaging tests in the year to March 2020,³⁰ with very many more diagnostic radiography examinations being performed per annum. It is therefore to be expected that more participants would have had experience of medical imaging compared with radiotherapy. It is of interest that, of the 14 respondents who had both radiotherapy and medical imaging, 8 elected to report on their medical imaging procedure. These respondents described negative experiences of the availability of suitable equipment, however, those reporting on their radiotherapy experience did not. None of the respondents describing their radiotherapy experience reported any concerns around gowns, waiting room chairs or other equipment. It could be speculated that the different patient volume and throughput has a bearing. For example, having a larger volume of attending patients could mean there are greater logistical difficulties in ensuring a ready source of different-sized gowns. The numbers are too small to draw firm conclusions but it has previously been suggested that diagnostic radiographers can tend to be task focussed³¹ with the priority seemingly being given to the production of a diagnostic image, rather than the interaction with the patient and this may also have some relevance, as evidenced by those illustrative comments that mention a sense of annoyance or being made to feel at fault.

Weight stigma is more clearly understood and is characterised by negative attitudes and discrimination towards overweight individuals based on stereotypes of laziness³² despite obesity being regarded by the World Health Organisation as a non-communicable disease.³³ There is evidence that physicians may have less emotional rapport and show less respect towards larger patients^{8,9} and healthcare professionals generally spend less time with them whilst being less helpful^{6,7} leading to feelings of dismissal.^{10,11} It has also been demonstrated that health care professionals describe larger patients as more "dangerous," "risky," "hard," "challenging," and "difficult" when talking about working with them.³⁴ Our study supports the notion that standard equipment and accessories do not accommodate the full spectrum of body sizes, and this can have impacts upon staff as well as upon the patients. The time taken to source different equipment if it is not readily available is likely to have a real-world impact upon busy clinical staff. Nevertheless, it is possible that, with planning and preparation, departments can be prepared to support patients with a full range of body sizes, for example by ensuring there is ready access to a range of size of gowns (accommodating a range of heights as well as weights) and chairs,³⁵ as well as knowing the location of more specialist equipment such as hoists. Being mindful of the sensitivities of individuals attending for imaging or treatment is also key. Furthermore, there is an argument that being able to adapt technique to accommodate a taller patient, as well as a larger one, should be part of any radiographer's skill set, and can be thought about, and prepared for, in advance of such patients arriving for imaging or treatment.

Implications for practice

It is essential that the profession of radiography learns from these patient experiences to enhance provision for individuals living in larger bodies - larger patients who perceived weight discrimination tend to avoid seeking routine preventive care, such as cancer screenings.^{36,37} Any such delay seeking medical help can then lead to advanced and more difficult to treat conditions or even avoidance of healthcare services altogether.^{5,38} It is important that patient facing clinical staff (radiographers, the radiography support workforce) have insight into the experience of individuals living in larger bodies so as to be able to practice person-centred care. This needs to be supported by ready access to suitable equipment and accessories, and the skills needed to be able to readily modify their technique, to accommodate a range of body sizes. It is also important to be aware that taller patients also experience challenges when attending for medical imaging and radiotherapy services, and there is a real need for further exploration of this particular cohort's experiences.

Strengths and limitations

There were some incomplete responses with 9 individuals being unable to proceed to the questionnaire having answered 'no' to one of the screening and consent questions. Six respondents were filtered out via the screening questions and the remaining 3 as they felt they did not have sufficient information about the study. This provides an assurance that the eligibility screening and informed consent processes have been suitably effective.

As recruitment was conducted using social media, individuals not active on those platforms would not have had the opportunity to participate. This is likely evidenced in the demographics of respondents being primarily well educated with 58 (63.0 %) holding a bachelor's degree or higher. A predominantly white identifying population was also noted, which may also be a

symptom of the recruitment method, suggesting future research should work to diversify recruitment methods. Furthermore, it is likely that there is an element of selection bias, in that individuals for whom this topic holds significant meaning are more likely to participate. Nevertheless, this survey has provided an initial insight into experiences of radiography for people living in larger bodies and is strongly suggestive of the need for further research and strategies to inform and improve practice.

Conclusions

This article reports upon the frequently negative experiences of adults living in larger bodies of both medical imaging and radiotherapy services within the UK specifically relating to facilities and equipment. It has been identified that availability of suitably sized equipment and accessories such as gowns and chairs impacts upon individual experience, and that this can have an adverse impact upon taller individuals as well as larger ones. The focus of this article has been on these practical elements of service provision many of which could be resolved by enabling more ready access to equipment and accessories in a wider range of sizes. This study has also highlighted the underappreciated struggles of taller individuals in healthcare. Further research is warranted to fully understand the emotional impact of such experiences on people in larger and taller bodies, as well as to understand the challenges experienced by clinical staff, to arrive at suggestions for inclusive practice.

Ethics approval and consent to participate

Ethical approval for this study was obtained from the University of Exeter Medical School and Health and Care Professions (UEMS & HCP) Research Ethics Committee (reference number: 1870378).

Informed consent, obtained by the participant proceeding with the electronic questionnaire, was obtained for anonymised participant information to be published in this article.

Availability of data

Data required for this study may be made available by the author(s) upon reasonable request.

Author contributions

CJH: Conceptualisation, Software, Validation, Formal Analysis, Resources, Data Curation, Writing – Original Draft, Project Administration, Funding Acquisition.

PU: Investigation, Formal Analysis.

AH: Conceptualisation, Methodology, Investigation, Resources, Writing – Review & Editing, Supervision.

FM: Conceptualisation, Methodology, Formal Analysis, Investigation, Resources, Data Curation, Writing – Original Draft, Visualisation/Data Presentation, Supervision.

Generative AI use (to support writing or proofing)

During the preparation of this work the author used ChatGPT/OpenAI in order to reduce the word count of a draft abstract in order to meet the journal requirements. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Funding

This research was funded by the College of Radiographers Industrial Partnership Scheme (CoRIPS) Research Grant (Number 232).

Conflict of interest statement

None.

Acknowledgements

We wish to thank the 'Larger Bodies in Radiography' Public Participation Involvement and Engagement Group for their initial and on-going insight and support.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radi.2025.103008>.

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