Clinical Radiology 80 (2025) 106717

Contents lists available at ScienceDirect

Clinical Radiology

journal homepage: www.clinicalradiologyonline.net

Sex discrimination, sexual harassment, and sexual assault in UK radiology training: a national survey

E. Robinson [a,*], P. Singhal [b,†], W. Loughborough [a], D. Little [a]

[a] Royal United Hospital Bath, Combe Park, Avon BA1 3NG, UK
[b] North Bristol NHS Trust, Southmead Road, Westbury-on-Trym Bristol, BS10 5NB, UK

ARTICLE INFORMATION

Article history:
Received 2 July 2024
Received in revised form
25 September 2024
Accepted 28 September 2024

AIM: Sex discrimination and sexual misconduct are endemic issues within the National Health Service (NHS). The extent of the problem amongst radiology registrars across the UK is unknown. This national survey explores the experiences of radiology registrars in relation to sex discrimination, sexual harassment, and sexual assault during radiology training, in addition to the impact on wellbeing and barriers to reporting behaviours.

MATERIALS AND METHODS: This observational study using qualitative data from distribution of a national survey with ethical approval.

RESULTS: 122 responses were received. A significantly increased proportion of females have witnessed or experienced sex discrimination and sexual harassment compared to males ($p < 0.05$). A greater proportion of females also experienced sexual assault however the numbers are low and not statistically significant.

The majority of perpetrators (58%) were senior colleagues both from within and outside of the radiology team (including radiology supervisors). 21% of perpetrators were patients.

72% of radiology registrars who experienced sex discrimination, harassment and/or assault were not happy with the way in which their situation was dealt with. 68% were not aware of a pathway in place for reporting such behaviours.

CONCLUSION: Sex discrimination and sexual harassment and assault have been experienced widely by radiology registrars, disproportionately affecting women. There are significant barriers to reporting these issues especially given most perpetrators are senior colleagues. We call upon responsible organisations to create a safe working environment for all, including implementing new pathways for reporting, developing training, and considering safety measures such as enhanced use of chaperones.

* Guarantor and correspondent. E. Robinson, Radiology Department, Royal United Hospital, Bath, UK.
E-mail address: elizabeth.robinson@doctors.org.uk (E. Robinson).
† Joint 1st Authorship.

https://doi.org/10.1016/j.crad.2024.09.023
0009-9260/

Introduction

Motivated by the focus of #MeToo movement, many industries have been shining a light on sexism and sexual abuse embedded in their organisational culture. Recent evidence has highlighted an endemic issue within the National Health Service (NHS) regarding the incidence of sexual harassment and sex discrimination among working doctors.[1] A previous survey conducted by the British Medical Association (BMA) highlighted that as many as 91% of female doctors experienced sexism, 31% had reported unwanted physical contact, and 56% unwanted verbal comments.[2] A national study of surgical trainees also found women are disproportionately affected, for example with 30% of women having been sexually assaulted compared to 7% of men in the last 5 years alone.[1]

On 4th September 2023, NHS England published its first sexual safety charter to which the Royal College of Radiologists (RCR) became a signatory.[3] As part of this charter, signatories commit to 'taking and enforcing a zero-tolerance approach to any unwanted, inappropriate and/or harmful sexual behaviours in the workplace'. What has not been shown previously is the extent of the problem amongst radiology registrars across the UK. It is important to understand the problem and the pervasive consequences in order to ensure our workplaces are safer for all.

We have conducted a national qualitative, observational study of experiences of sex discrimination, sexual harassment, and sexual assault during radiology training. This study provides the first evidence of the scale of the problem within radiology training.

Aims and objectives

- Describe rates of exposure to sex discrimination, sexual harassment, and sexual assault among UK radiology registrars.
- Explore trends related to protected characteristics, the perpetrators, barriers and response to reporting.

Methods

This was a national observational study using qualitative data from distribution of a national survey.

Data collection

Following ethical approval, under General Data Protection Regulation compliant protocols, an open invitation was sent to all UK radiology registrars via email from Junior Radiologists' Forum (JRF) records. No trainee was excluded from participation. Participation was voluntary and was not remunerated. The invitation detailed the aims of the questionnaire, information regarding the study and the process of anonymising and storing. Written consent was obtained. Content warnings were placed at the beginning of correspondence, with participants signposted to sources of support.

The survey was created assessing domains of sex discrimination, sexual harassment and assault in radiology training adapted from previous research.[1,4–6] Based on feedback of those involved in radiology training, including supervisors and trainees (including those affected), the authors devised questions to ensure they were relevant to this specific setting. The survey itself and the data were retained within Microsoft Forms © (see appendix). Before each subsection of questions, a definition was provided for sex discrimination, sexual harassment, and assault respectively with examples provided to allow uniform interpretation of the questions posed (see appendix). It was emphasised in the survey that the questions related specifically to experiences during radiology training. Data were obtained from criterion-based (tick box) responses and a single free text box.

Statistical analysis

Study data were analysed using Microsoft Excel ©. Descriptive statistics were used to summarise the data. Cases with missing data were excluded from the summary statistics. Statistical significance of differences observed were assessed using the Chi-squared test.

Ethics

This study received Health Research Authority (HRA) approval (HRA reference 23/HRA/4785).

Results

Demographics

In total, there were 122 responses: 58 male (48%), 59 female (48%), 5 non-binary/other (4%). These responses were returned from a cohort of 2049 trainees in active training at the time the survey was conducted (approximately 6% response rate). Given the very small number of participants who were either 'non-binary' or 'prefer not to say' sub-group analysis has been limited to comparison between males and females, to preserve anonymity. No participant identified as transgender. 104 (85%) of participants identified as heterosexual.

Ninety eight percent (120/122) of our participants were under 40 years old, the majority of which were aged between 30 and 40 years old (72%). 50% (61/122) of participants identified themselves as of White ethnicity, composed proportionately of more female respondents compared to male. The second largest ethnic group were Asian making up 25% (31/122) of our participants, with an equal male to female ratio.

Experiences of sex discrimination and sexual harassment

Our results demonstrate that 52% (64/122) of all respondents experienced or witnessed sex discrimination, 38% (46/122) sexual harassment, and 15% (18/122) sexual assault.

Sex differences

Consistent differences were seen between males and females (see summary Fig 1a). A greater proportion of females, 75% (44/59) experienced or witnessed sex discrimination compared to 29% (17/58) of males, p value < 0.05. A similar trend was observed with sexual harassment where a greater proportion of females, 49% (29/59), experienced or witnessed sexual harassment compared to 26% (15/58) of males, p value < 0.05. This trend was again reflected in relation to sexual assault with a greater proportion of females, 20% (12/59), experiencing or witnessing sexual assault compared to males at 10% (6/58). However, this did not reach statistical significance, p value > 0.05.

The participants were asked separate questions on how often they have witnessed and how often they have experienced sex discrimination, sexual harassment, and sexual assault (Fig 1b–d). Statistically significant differences (p value < 0.05) were observed for the following: 66% (39/59) females have witnessed sex discrimination compared to 21% (12/58) males; 66% (39/59) females have experienced sex discrimination compared to 21% (12/58) males; 54% (32/59) females have experienced sexual harassment compared to 16% (9/58) males.

Ethnicity differences

White and Asian ethnicities made up the largest proportion of participants at 50% and 25%, respectively. However, as acknowledged above, there was a larger proportion of female respondents in the White ethnicity group which confounds any subgroup analysis for ethnicity. As seen in Table 1, 56% (34/61), 46% (28/61), and 13% (8/61) of responses from White individuals showed they had experienced discrimination and/or harassment and/or assault, respectively. 45% (14/31), 19% (6/31), and 19% (6/31) of responses from Asian individuals showed they had experienced discrimination and/or harassment and/or assault, respectively. More broadly, 46% (25/54), 25% (14/54), and 17% (9/54) of responses from Black and minority ethnic (BME) (including Asian respondents) showed they had experienced discrimination and/or harassment and/or assault, respectively.

Overall, when combining all the responses to questions related to experiences of discrimination, and/or sexual harassment, and/or assault, a significant difference was not observed between different ethnic groups, p value > 0.05. 7/122 responded as 'prefer not to say' for ethnicity was not included in this analysis.

Perpetrators of sex discrimination

Perpetrators of sex discrimination in radiology training were reported to be from multiple sources (see Fig 2a). Most perpetrators of sex discrimination were from outside the radiology team, 60% (88/146). Similarly, a majority of perpetrators were senior colleagues, 58% (85/146), (inclusive of radiology supervisors, senior radiology colleagues and senior colleagues outside of radiology). 21% (30/146) of perpetrators were found to be patients.

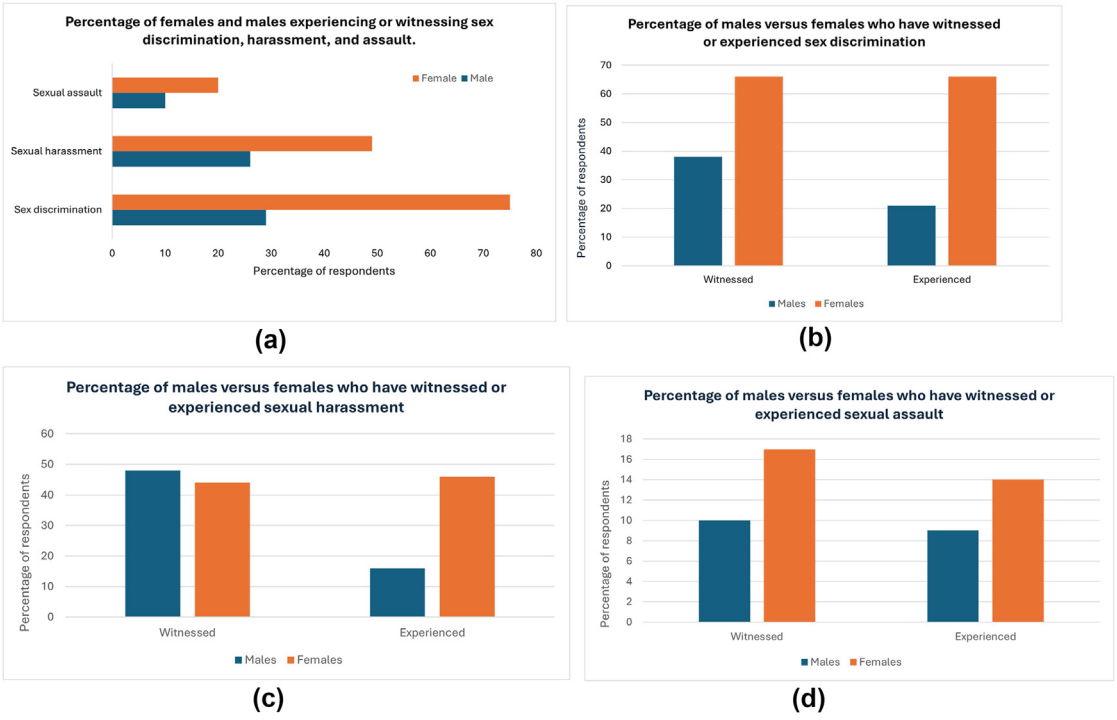

Figure 1 (a): Percentage of females and males experiencing or witnessing sex discrimination, sexual harassment, and sexual assault. (b): Percentage of females and males who have witnessed or experienced sex discrimination. (c): Percentage of females and males who have witnessed or experienced sexual harassment. (d): Percentage of females and males who have witnessed or experienced sexual assault.

Table 1
Experiences of sex discrimination, sexual harassment and assault by ethnicity of respondents.

	White	Asian	BME (including Asian)
Experiences of sex discrimination	34/61 (56%)	14/31 (45%)	25/54 (46%)
Experiences of sexual harassment	28/61 (46%)	6/31 (19%)	14/54 (25%)
Experiences of sexual assault	8/61 (13%)	6/31 (19%)	9/54 (17%)

Perpetrators of sexual harassment

In the context of sexual harassment, there was a more even distribution of perpetrators from within the radiology team (49%, 41/84) compared to outside the radiology team (51%, 43/84). Again, senior colleagues (both within and outside the radiology team) were found to be more likely to be the perpetrator of harassment, 62% (52/84) (see Fig 2b). A proportion of harassment was found to be perpetrated by patients, 21% (18/84).

Perpetrators of sexual assault

Subgroup analysis in relation to experiences of sexual assault is limited by overall smaller numbers. Allowing for this, a higher proportion of sexual assault arose from a person outside of the radiology team (including patients), 56% (15/27), compared to within the radiology team, 44% (12/27). Overall, 41% (11/27) of all assaults were perpetrated by a patient (see Fig 2c).

Free text responses to the questionnaire

A separate analysis of free text responses has not been performed to preserve anonymity. However, we note only 29 participants provided additional free-text comments out of a total of 97 participants who had experienced and/or witnessed sex discrimination, harassment and assault. Amongst the responses there was a diversity of settings in which discrimination, harassment, and/or assaults were occurring, for example: the multidisciplinary team (MDT) meeting room, ultrasound setting and the reporting room.

Impact on emotional wellbeing

Experiences of sex discrimination and harassment have a significant negative impact on how radiology registrars feel in the workplace, which is summarised in the Fig 3. The most common feelings were that of being uncomfortable at work, feeling embarrassed, and losing respect for the people involved.

How victims responded to the situation

Most victims either ignore the behaviour or avoid the perpetrator if they can. Many discuss the situation with a

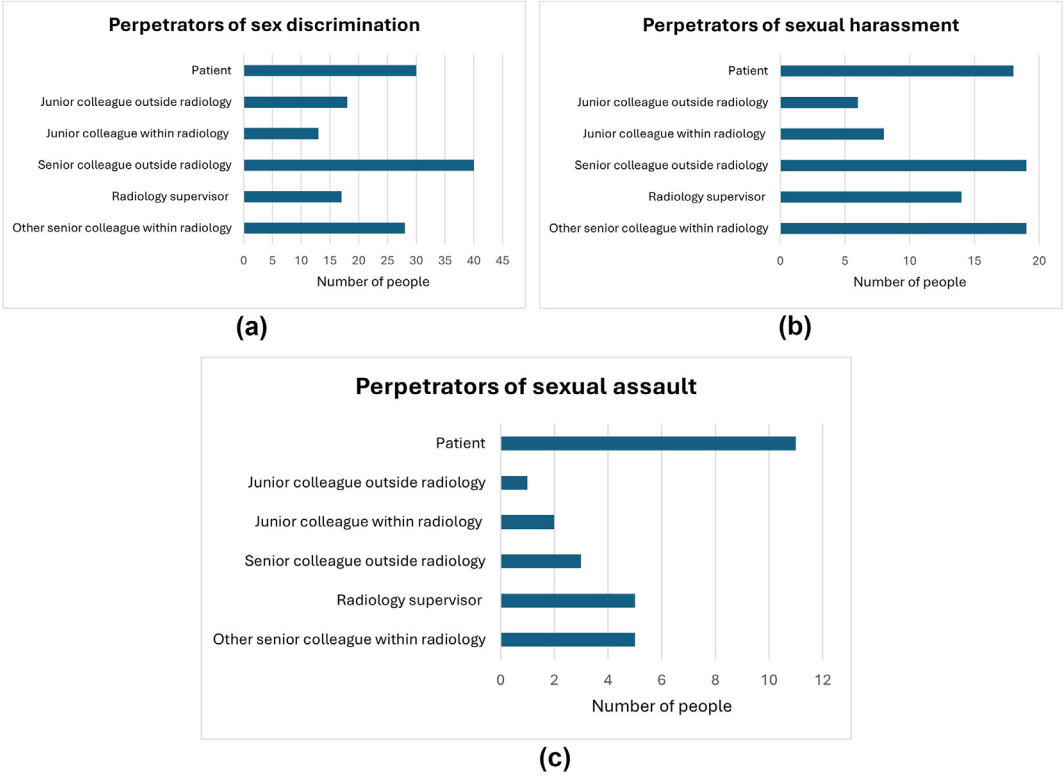

Figure 2 (a): Distribution of perpetrators of sex discrimination towards radiology registrars during their training. (b): Distribution of perpetrators of sexual harassment towards radiology registrars during their training. (c): Distribution of perpetrators of sexual assault towards radiology registrars during their training.

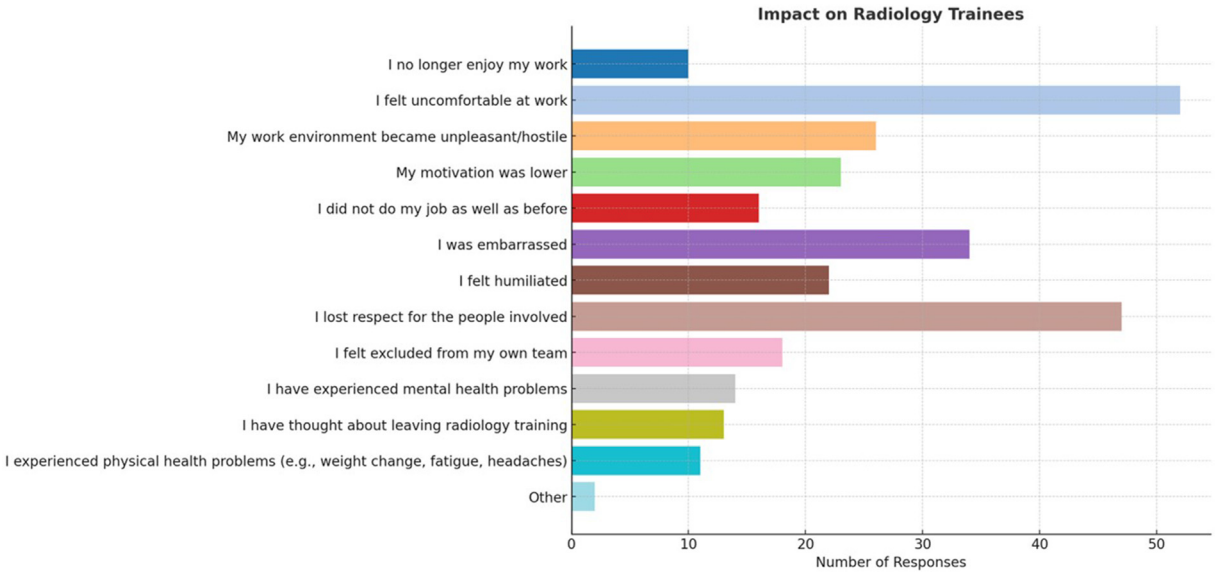

Figure 3 Summary of the impact of sex discrimination, harassment and assault on radiology registrars.

colleague or friends/family. However, most do not report the issue formally (see Fig 4).

The barriers victims faced to reporting behaviours are summarised in Fig 5. The most common barriers faced were 'fear of retaliation from the perpetrator', 'adverse impact on training and career progression', and 'feeling nothing will happen anyway'.

Overall, when directly asked a binary, 'Yes' or 'No', question, 72% (46/64) of respondents who experienced sex discrimination, harassment and/or assault were not happy with the way in which their situation was dealt with. In addition, 68% (68/93) of respondents who witnessed or experienced sexual discrimination, harassment and/or assault were not aware of a pathway in place for reporting such behaviours.

Discussion

Over half of our participants experienced or witnessed sex discrimination, over a third sexual harassment, and worryingly 15% sexual assault. Our results have shown that sex discrimination, harassment, and assault, affect a significantly greater proportion of females compared to males. These results align with that seen in a recent study conducted on exploring sexual misconduct in the workplace for surgical registrars.[1] Our results demonstrate that sex discrimination, harassment, and assault are a significant problem in radiology training. This is unacceptable and must not be overlooked.

As we collectively face a workforce crisis in radiology,[7] the implications for colleague welfare and ultimately recruitment

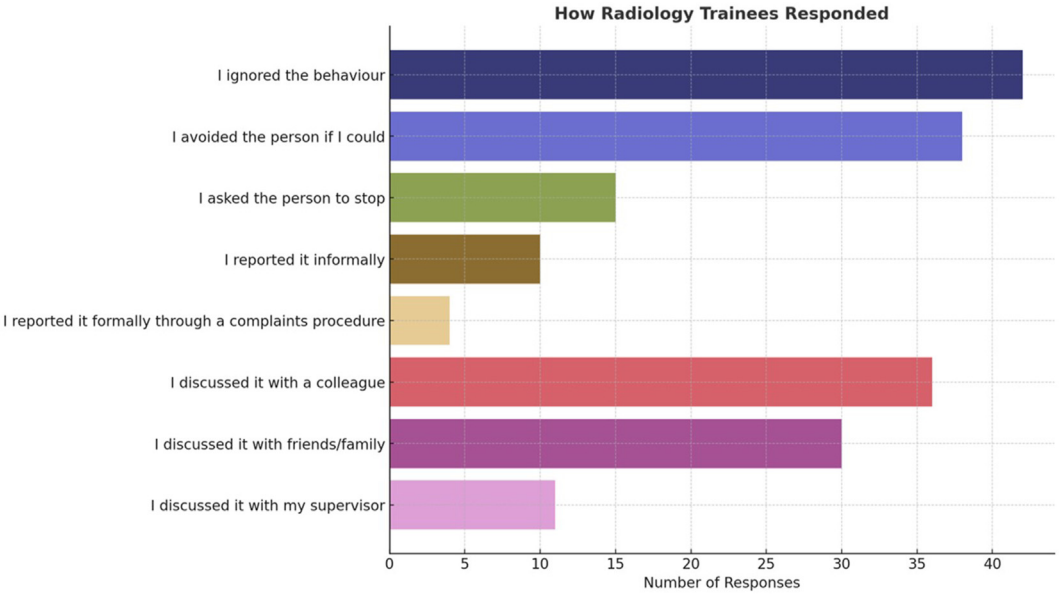

Figure 4 Summary of how victims responded to sex discrimination, harassment and assault in the workplace.

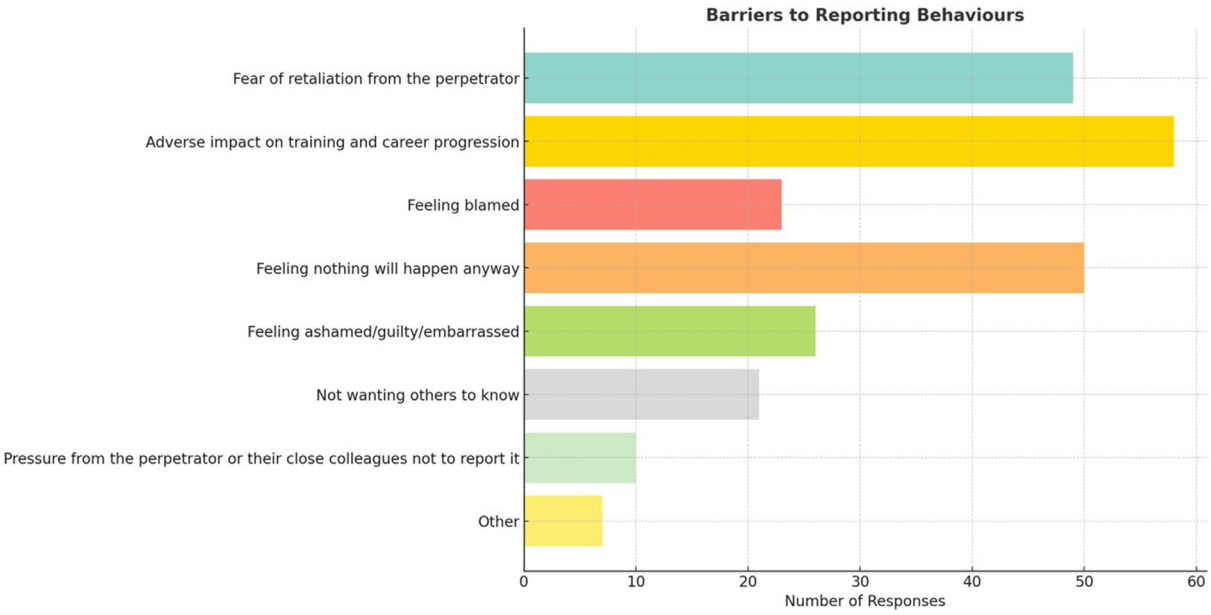

Figure 5 Summary of barriers to reporting sexual discrimination, harassment and assault in the workplace.

and retention in the specialty are potentially profound. There is a strong association with instances of sexual harassment and decreased job satisfaction, lower commitment to the organisation, poor mental and physical health, and withdrawal from work.[8] Unsurprisingly, our study shows that many victims felt their working environments became unpleasant, motivation was lower, and did not feel they performed their work as well as they did before. As a result, allowing such behaviours to continue in the workplace will not only impact the health of staff themselves, but may also pose a risk to patient safety. [9] There must be a zero-tolerance approach to these issues to ensure radiology registrars feel safe and positive about their work.

Our data highlight that senior colleagues, both inside and outside of radiology, make up the largest proportion of perpetrators involved in sex discrimination, harassment, and assault. In surveys performed in other specialties there were similar themes, [10,11] with senior colleagues being the commonest perpetrators. This is concerning given the hierarchical structures of training for doctors. Registrars should be able to rely on their supervisors for discussing/reporting these issues, however, in many instances supervisors are the perpetrators of this discrimination, harassment and even assault. This raises significant challenges for reporting of such issues and undermines the principles of supervision through any difficulty.[12] The vast majority of radiology training is provided by radiology consultants and senior radiology registrars, often in a one-to-one environment. Some of the experiences described by our participants in the free text answers also alluded to these scenarios sometimes occurring in the setting of MDT meetings by senior clinicians from other specialities.

The study has also identified that a significant proportion of perpetrators are patients. This is not a new issue in medicine, with historical data suggesting a majority of female physicians experience sexual harassment from a patient during their career.[13] Radiology registrars may often be in a room alone with patients during imaging lists. The practice of using chaperones during ultrasound lists varies between Trusts, often with chaperone availability being limited and reserved for only intimate patient examinations e.g. testicular ultrasound, as per RCR guidance.[14] Our results highlight the potential need for chaperones during all interactions between radiology registrars and patients.

Radiology registrars feel there are multiple barriers to reporting issues related to sex discrimination, harassment, and assault. A significant proportion of victims feel reporting such incidents could have an adverse effect on their training progression and fear retaliation from the perpetrator, which is understandable given that the largest proportion of perpetrators are senior colleagues. Many radiology registrars mentioned they felt embarrassed, which can lead to underreporting of these issues. It is very important radiology registrars feel comfortable in raising their concerns on these issues in a timely manner and seek appropriate resolution. It is known from existing evidence that silence or lack of reporting surrounding sexual violence and harassment (which is entirely understandable given the described barriers), unfortunately serves to ultimately facilitate it. [15] Novel pathways and mechanisms of reporting are needed to increase confidence in highlighting and resolving these issues. One broader mechanism could be through an anonymous reporting system, where a victim may anonymously report instances into a centralised Trust system, similar to the current exception reporting pathway. This could allow a body of evidence to form and evaluation of trends without a person needing to come forward directly.

We must ensure our workplaces are safe environments for concerns related to sex discrimination and misconduct to be reported and actioned appropriately. Unfortunately, 72% of participants were unhappy with the way in which these issues were dealt with. This study highlights the

pervasive lack of confidence from radiology registrars that accountable organisations will resolve the issue appropriately.

This study has highlighted a need for increased awareness of pathways for reporting these issues, ensuring radiology registrars feel they are able to speak freely and importantly without any perceived repercussions. It is important that registrars are equipped with the knowledge of how to escalate concerns regarding these behaviours and the people that can help, which might include educational supervisors, Training Programme Directors (TPD), Heads of School, Trust Guardian of Safe-working, Freedom to Speak up Champions, and the police. It is also important that trainers have adequate training in dealing with these scenarios which are understandably uncomfortable but must be dealt with appropriately and not ignored. Given the scale of the problem in healthcare, consideration should be given to developing dedicated, easily accessible pathways for concerns to be raised.

This is the first study exploring experiences of sex discrimination, harassment, and assault, specifically among UK radiology registrars. Following this work, we recommend collaboration of healthcare organisations to conduct further larger scale studies to explore the prevalence and trends of these issues further and innovate reporting pathways.

Limitations

Overall, the number of respondents was limited to only 122 which did not allow for a true description of national prevalence and it is likely there was a degree of selection bias in the responses. We believe survey fatigue in the midst of an already burnt-out workforce[16] likely has a part to play in our low response rate. Additionally, there may also be a lack of psychological safety felt by radiology registrars, who may not feel comfortable sharing their experiences (even if anonymously). Our lower response rate may have introduced selection bias, however we minimised this by encouraging all to participate, irrespective of whether they had witnessed or experienced these issues.

Conclusion

This study highlights that sex discrimination, sexual harassment and sexual assault are a significant problem in radiology training. Females are more commonly affected than males. Sadly, but perhaps unsurprisingly, there are several barriers that prevent registrars from feeling able to report these unacceptable behaviours, for example a perceived threat to training and career progression, as well as a feeling that there is no point reporting these behaviours as they will not be resolved or dealt with appropriately. Concerningly this study highlights that patients are a significant perpetrator of these behaviours.

We call on all organisations and individuals to explore what they can do to create a safe working environment for all, for example, developing safe pathways to raise concerns, adequate training for trainers and registrars in the dealing with these issues, considering chaperones for all patient interactions, and the importance of enacting a zero-tolerance policy to these abhorrent behaviours.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author contribution

1 Guarantor of integrity of the entire study; Manuscript preparation; Manuscript editing: E. Robinson, P. Singhal, W. Loughborough, D. Little.
2 Study concepts and design: E. Robinson, P. Singhal, D. Little.
3 Literature research; Experimental studies/data analysis; Statistical analysis: E. Robinson, P. Singhal.
4 Clinical studies: N/A.

Conflict of interest

The authors declare the following financial interests/personal relationships that may be considered as potential competing interests: Dr Priyanka Singhal is the Chair of the Junior Radiologists' Forum at the Royal College of Radiologists.Dr David Little is Head of Severn School of Radiology (employed by NHSE) and sits on Specialty Training Board at the Royal College of Radiologists.Dr William Loughborough is Training Programme Director of Severn School of Radiology (employed by NHSE).

Acknowledgements

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.crad.2024.09.023.

References

1. Begeny CT, Arshad H, Cuming T, *et al*. Sexual harassment, sexual assault and rape by colleagues in the surgical workforce, and how women and men are living different realities: observational study using NHS population-derived weights. *Br J Surg* 2023;**110**:1518–26.
2. Romney D. *Independent report into sexism at the BMA [Internet]*. 2019 [cited 2023 Dec 20]. Available from: https://www.bma.org.uk/media/1244/bma-daphne-romney-qc-report-oct-19.pdf.
3. NHS England. *Sexual safety in healthcare – organisational charter [Internet]*. 2023 [cited 2023 Dec 20]. Available from: https://www.england.nhs.uk/publication/sexual-safety-in-healthcare-organisational-charter/.
4. Fitzgerald LF, Shullman SL, Bailey N, *et al*. The incidence and dimensions of sexual harassment in academia and the workplace. *J Vocat Behav* 1988;**32**:152–75.

5. Fitzgerald LF, Gelfand MJ, Drasgow F. Measuring sexual harassment: theoretical and psychometric advances. *Basic Appl Soc Psych* 1995;**17**:425–45.
6. Pitot MA, White MA, Edney E, *et al*. The current state of gender discrimination and sexual harassment in the radiology workplace: a survey. *Acad Radiol* 2022;**29**:416–25.
7. The Royal College of Radiologists. *Clinical radiology census report 2022. London*. 2022.
8. Willness CR, Steel P, Lee K. A meta-analysis of the antecedents and consequences of workplace sexual harassment. *Pers Psychol* 2007;**60**:127–62.
9. Halim UA, Riding DM. Systematic review of the prevalence, impact and mitigating strategies for bullying, undermining behaviour and harassment in the surgical workplace. *Br J Surg* 2018;**105**:1390–7.
10. Hu YY, Ellis RJ, Hewitt DB, *et al*. Discrimination, abuse, harassment, and burnout in surgical residency training. *N Engl J Med* 2019;**381**:1741–52.
11. Crebbin W, Campbell G, Hillis DA, *et al*. Prevalence of bullying, discrimination and sexual harassment in surgery in Australasia. *ANZ J Surg* 2015;**85**:905–9.
12. The Royal College of Radiologists. *Clinical radiology specialty training curriculum [Internet]. London*. 2023 [cited 2024 Jun 17]. Available from: https://www.rcr.ac.uk/media/fhibddxp/rcr-curriculum_clinical-radiology-specialty-training-curriculum_august-21-updated-may-2023.pdf.
13. Phillips SP, Schneider MS. Sexual harassment of female doctors by patients. *N Engl J Med* 1993;**329**:1936–9.
14. The Royal College of Radiologists. *Intimate examinations and the use of chaperones [Internet]. London*. 2015 [cited 2024 Jun 10]. Available from: https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/intimate-examinations-and-the-use-of-chaperones/.
15. Hershcovis MS, Vranjes I, Berdahl JL, *et al*. See no evil, hear no evil, speak no evil: theorizing network silence around sexual harassment. *J Appl Psychol* 2021;**106**:1834–47.
16. Fawzy NA, Tahir MJ, Saeed A, *et al*. Incidence and factors associated with burnout in radiologists: a systematic review. *Eur J Radiol Open* 2023;**11**:100530.