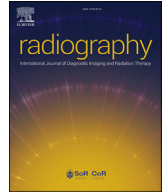




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



“It has been the most difficult time in my career”: A qualitative exploration of UK obstetric sonographers’ experiences during the COVID-19 pandemic



E. Skelton ^{a,*}, A. Smith ^b, G. Harrison ^c, M. Rutherford ^d, S. Ayers ^e, C. Malamateniou ^{a,f}

^a Division of Radiography and Midwifery, School of Health and Psychological Sciences, University of London, EC1V 0HB, UK

^b Guy's & St Thomas' NHS Foundation Trust, London, SE1 7EH, UK

^c Society and College of Radiographers, London, SE1 2EW, UK

^d Perinatal Imaging and Health, King's College London, SE1 7EH, UK

^e Centre for Maternal and Child Health Research, School of Health and Psychological Sciences, University of London, EC1V 0HB, UK

^f Haute Ecole de Santé Vaud, Lausanne, Switzerland

ARTICLE INFO

Article history:

Received 18 January 2023

Received in revised form

28 February 2023

Accepted 11 March 2023

Available online 21 March 2023

Keywords:

COVID-19

Moral injury

Obstetrics

Pregnancy

Sonographer

Ultrasound

ABSTRACT

Introduction: Substantial changes were made to the provision of pregnancy ultrasound services during the COVID-19 pandemic with the intention of minimising virus transmission and maintaining service continuity. Published literature describing the impact of the pandemic on obstetric sonographers is predominantly quantitative in nature, however statistics cannot fully convey sonographers' voices. This study aimed to gain a deeper understanding of the lived experiences of UK obstetric sonographers performing pregnancy ultrasound scans during the pandemic.

Methods: A UK-wide, online, anonymous cross-sectional survey on Qualtrics XM™ was open to responses between 9th March and 6th May 2021. Whilst this survey contained some quantitative elements, open questions were included to capture additional qualitative detail from respondents about their perceptions and experiences of scanning during the pandemic. Key themes were generated from free text responses using thematic analysis.

Results: Written responses were received from 111/138 sonographers participating in the survey. Five themes were generated, depicting the impact of the pandemic on obstetric sonographers: 1) continuity in a crisis; 2) decisions about me, without me; 3) battle scars – the lasting damage of COVID-19; 4) what people think I do vs. what I really do; and 5) the human touch. A cross-cutting theme was sonographers' feelings of disconnection from senior figures and expectant parents which created a sense of abandonment and distrust.

Conclusion: Survey respondents' self-reported experiences of ineffective leadership and management, and perceived lack of understanding of the complexity of the sonographer role are potential contributory factors in the high levels of moral injury and occupational burnout reported within the workforce during the pandemic.

© 2023 The Author(s). Published by Elsevier Ltd on behalf of The College of Radiographers. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Introduction

During the COVID-19 pandemic, healthcare services made substantial changes to balance continuity of care with safety of service users, members of the public and staff.¹ Recommended changes to

the provision of obstetric ultrasound included reprioritisation of fetal scans because of reduced departmental capacity,² risk assessments,³ and temporary restrictions on additional people attending scans.^{4,5} Early published literature exploring the experiences of healthcare professionals reported immediate considerations for services, including the supply (or lack) of personal protective equipment (PPE),⁶ telehealth in place of in-person appointments,⁷ and screening initiatives to reduce virus transmission in hospitals.⁸ However, as staff adapted to new working practices,

* Corresponding author. Division of Radiography and Midwifery, School of Health Sciences, University of London, EC1V 0HB, UK.

E-mail address: emily.skelton@city.ac.uk (E. Skelton).

@emily_s_skelton (E. Skelton)

research foci shifted to explore the longer-term psychological impact of the pandemic on workers.⁹

Moral injury and burnout in COVID-19

The negative psychological impact of the COVID-19 pandemic on healthcare professionals is well documented.¹⁰ This has been described in relation to occupational burnout, and attributed to factors such as fear of contracting or transmitting the virus, being redeployed to unfamiliar clinical areas, and increased workloads because of staff shortages.¹¹ However, it has been suggested that research exploring occupational burnout in healthcare professionals often fails to give appropriate recognition to the prevalence and influence of moral injury as a precursor to burnout.¹²

Moral injury is often described in the military context, whereby individuals experience guilt or shame as a result of their own actions (or lack of), which conflict with their moral values.¹³ However, it is also experienced through the recurrent violation of normative expectations, or betrayal of trust, by a person in authority.¹⁴ Normative expectations are broadly defined as “beliefs about what people *should* do combined with predictions about what they *will* do”.¹⁵ When they are felt to be breached, individuals may experience a strong affective response including feelings of cynicism, disengagement, resentment, and withdrawal of trust¹⁶ causing a moral injury.¹⁷ It is important to make the distinction between occupational burnout and moral injury, as without full appreciation of the underlying cause of an individual’s psychological distress, appropriate support and initiatives for recovery cannot be actioned.¹⁸

The impact of COVID-19 on sonographers

There is a growing body of literature reporting the impact of the COVID-19 pandemic on obstetric sonographers working in the UK,^{19–21} Australasia^{22–24} and other countries.²⁵ As with other healthcare professionals, the lack of adequate and available PPE for sonographers was a common finding,^{19,21,23} with concerns raised by 71.9% of sonographers across 124 countries.²⁵ Substantial modifications to scanning practices were noted; including reducing the number of scans²² and length of appointments,²³ restricting the number of people permitted to attend,^{21,23} and making changes to public waiting areas following risk assessments,²⁰ although these varied between countries. Additionally, increased workloads from rigorous cleaning and infection control procedures,^{23,24} rapidly changing guidance perceived as ambiguous²¹ and unhelpful,²⁰ and concerns over personal safety because of aggressive and abusive behaviour towards sonographers from expectant parents and the public are also reported.²¹

Although studies reporting the psychological impact of the pandemic on sonographers are fewer, fear of contracting or transmitting the virus is highlighted as a contributing negative factor on sonographers’ well-being,^{21,24} exacerbated by the inability to physically distance whilst scanning.²¹ In UK obstetric sonographers, high levels of occupational burnout were reported, with over 90% of respondents meeting thresholds for emotional exhaustion and disengagement.¹⁹ In addition, 73.9% of respondents were considering leaving the profession completely, or changing their area of clinical practice within the next five years,¹⁹ which would have a significant impact on the already stretched UK sonographic workforce.²⁶

With one exception,²¹ published literature regarding sonographers’ experiences of scanning during the COVID-19 pandemic is largely based on numerical data and statistics which cannot fully capture individual voices and reflections. The aim of this paper, therefore, was to qualitatively explore UK obstetric sonographers

experiences of performing pregnancy ultrasound scans during the COVID-19 pandemic, and to provide additional, psychosocial context to previously reported quantitative findings^{19,20} which may be used to underpin workforce recovery strategies in the aftermath of the pandemic.

Methods

Reporting of the study is guided by the Journal Article Reporting Standards for All Qualitative Research Designs (JARS-Qual).²⁷ An online, anonymous questionnaire was developed using the QualtricsXM™ platform,²⁸ and the weblink was shared within the UK sonographic community using a snowball sampling technique via social media and professional networking channels (e.g. Twitter, Facebook, LinkedIn). Departmental managers were also approached by the research team to share the weblink with staff who were not active on social media. This approach was used to facilitate rapid collection of a large dataset for the quantitative components of the survey during a period of national lockdown,²⁹ and to adhere to additional restrictions on conducting research activity which were in place during the COVID-19 pandemic.³⁰ The survey was reviewed by volunteers from the Society of Radiographers’ Ultrasound Advisory Group who gave feedback on readability of questions and usability of the QualtricsXM™ platform, resulting in minor changes to the wording of questions for improved clarity. No data was collected during this review phase, and volunteers could still take part in the main study if they wished to. The questionnaire was composed of four sections: 1) sonographer experiences of performing obstetric ultrasound examinations during the COVID-19 pandemic ([Supplementary Appendix 1](#)); 2) Oldenburg burnout inventory³¹ to evaluate self-reported levels of occupational burnout; 3) CORE-10 tool³² to assess psychological distress in respondents; and 4) participant demographics. Section one featured multiple choice questions and provided the option for respondents to share further insight into their experiences through free text responses. Further details about the study design and the quantitative results for sections 1–3 have been previously published.^{19,20} This paper presents the qualitative analysis of sonographers’ free text survey responses from section one.

Eligibility and informed consent

Sonographers could participate if they were 21 years old or over and had performed obstetric ultrasound examinations during the COVID-19 pandemic (i.e., since March 2020). Exclusion criteria were trainee and non-obstetric sonographers to keep alignment with the research focus. Prior to accessing the questionnaire, respondents were required to read the accompanying information sheet, confirm their eligibility to participate, and complete an electronic declaration of informed consent. Participants were prompted to answer all questions, although they were free to leave blank responses if they wished.

Qualitative analysis

Data were downloaded into Microsoft Excel (version 2008)³³ from the QualtricsXM™ platform²⁸ after the questionnaire was closed to responses on 6th May 2021. Qualitative data were extracted and imported into NVivo (version 12)³⁴ for thematic analysis. This method was chosen for its flexibility to facilitate a thorough analysis of the large and heterogeneous qualitative dataset acquired through the online questionnaire.³⁵ An inductive approach was taken following the 6-step framework described by Braun and Clarke.^{36,37} Following familiarisation with the dataset, the free-text responses for individual questions were coded. Codes

were reviewed collectively for further exploration of patterns of meaning across the dataset. During this process, similar codes were combined, and new codes were generated to represent the groups. The groups were reviewed against the full dataset, and overarching themes were developed and subsequently refined to reflect the individual codes. Finally, core themes were reviewed during the writing up process, and illustrative quotations were selected from the dataset to provide supportive examples. Prior to submission, a near-final version of the manuscript was reviewed by two sonographers who volunteered to provide feedback on the findings.³⁸ This was an important process to validate the findings. These volunteers had not completed the survey themselves, but confirmed the developed themes were reflective of their clinical experiences, therefore no changes were made to the reporting.

Ethical considerations

This study was reviewed and granted ethical approval by the School of Health and Psychological Sciences at City, University of London (reference: ETH2021-1240, date of approval 09 March 2021). Due to the sensitive nature of the research topic and timing of data collection, there was a possibility that sonographers' participation may have led to psychological distress in recalling and relaying their experiences. Therefore, contact details for UK-based mental health organisations were provided to all respondents on completion of the questionnaire.

Results

In total, 138 sonographers actively participated in the questionnaire with a completion rate of 81.0%. Free-text responses were provided by 111 sonographers across 15 questions. Most participants were female (96.6%), of white ethnicity (86.5%) and working in full-time clinical roles within the NHS during the COVID-19 pandemic (49.4%) (Table 1). Despite the potential risk of distress, many sonographers expressed gratitude through their responses at the opportunity to take part in this study and share their perspectives.

Findings

Five themes were generated: 1) continuity in a crisis; 2) decisions about me, without me; 3) battle scars – the lasting damage of COVID-19; 4) what people think I do vs. what I really do; and 5) the human touch (Table 2). Themes and illustrative quotations are provided below.

Continuity in a crisis

Continuity of obstetric ultrasound services during the pandemic was primarily facilitated by sonographers' immense professional pride and duty of care to expectant parents. Despite concerns around contracting the virus because of working in physical closeness to parents, they did not let this stand in the way of them providing high-quality care.

"I am professional and will care for women and their partners as usual."

(Full-time sonographer, aged 51–60)

Efforts required to keep the screening service going were also driven by feelings of satisfaction and accomplishment in the role, particularly when drawing on specialist knowledge to contribute to

care management pathways. In contrast, risk mitigation strategies and new guidance issued by professional organisations to assist the safe running of imaging services were not highly regarded, because of their perceived lack of direct benefit to sonographers and ambiguity leading to variation in implementation.

"I feel that the guidelines have been as a result of public pressure as opposed to being actually supportive of sonographers."

(Full-time sonographer, aged 21–30)

The focus from leadership and management personnel on preservation of the parental experience during scans above the well-being of sonographers, led to solidarity in their shared sense of abandonment from senior figures, and sonographers seeking compassion from other members of the immediate ultrasound team to keep them going.

"Fellow sonographers have been vital emotional support during a truly difficult professional time."

(Part-time sonographer, aged 31–40)

Decisions about me, without me

Sonographers felt excluded from discussions at both local and national levels, about their own working practices, creating a sense of isolation.

"We as sonographers feel as if we were forgotten during the pandemic."

(Part-time sonographer, aged 31–40)

They described indignation at how decisions to reintroduce partners and support persons to scans, as national lockdown restrictions lifted, had been made by non-sonographer colleagues, whilst restrictions and/or virtual appointments remained for other antenatal care consultations. This evoked a feeling of distrust, which was further exacerbated by contradictory risk assessments and mitigation strategies which failed to reassure them of the safety of their working environments.

"The risk assessments were initially done on a generic basis and were found to be lacking. They have since been redone and there is some disagreement between the staff actually working in the environments and what the health and safety advisor and management assessments state ..."

(Employment status not shared, aged 31–40)

In addition, sonographers were frequently made to feel like troublemakers for raising concerns over their safety, particularly after the restrictions around partner attendance at scans were lifted around the end of 2020, and described encounters where they had been berated by senior management for speaking out. These events served to reinforce a shared belief that sonographers were expendable workers whose safety needs could be compromised to avoid confrontation and facilitate "business as usual".

"Obstetric ultrasound was the sacrifice given to protect other staff providing antenatal care. The scan was promoted by the Trust as a gift to pregnant women and partners so they wouldn't complain about the reduced antenatal checks without partners."

Table 1
Participant characteristics.

Age Group	21–30, n = 12 (13.48%) 31–40, n = 20 (22.47%) 41–50, n = 24 (26.97%) 51–60, n = 31 (34.84%) 61+, n = 2 (2.25%)
Gender	Female, n = 86 (96.63%) Male, n = 2 (2.25%)
Ethnicity	Prefer not to say, n = 1 (1.12%) White/British/Welsh/Scottish/Northern Irish/Gypsy or Irish Traveller, n = 77 (86.52%) Asian/Asian British, n = 4 (4.49%) Mixed/Multiple ethnic, n = 2 (2.25%) Other, n = 2 (2.25%) Black/African/Caribbean/Black British, n = 1 (1.12%)
Education	Prefer not to say, n = 3 (3.37%) University degree (postgraduate), n = 79 (87.00%) Diploma in Medical Ultrasound (DMU), n = 5 (5.00%) University degree (undergraduate), n = 3 (3.00%)
Years of experience	Prefer not to say, n = 3 (3.00%) 0–5, n = 19 (21.35%) 6–10, n = 13 (14.61%) 11–15, n = 18 (20.22%) 16–20, n = 13 (14.61%) 21–25, n = 9 (10.11%) 26+, n = 17 (19.10%)
Professional memberships	Society of Radiographers, n = 79 British Medical Ultrasound Society, n = 40 Royal College of Midwives, n = 9 International Society of Ultrasound in Obstetrics and Gynecology, n = 2 Royal College of Nursing, n = 1 Other, n = 1
Geographical location	Prefer not to say, n = 1 England – South East, n = 20 (22.47%) England–North West, n = 13 (14.61%) England – South West, n = 13 (14.61%) England – East, n = 10 (11.24%) England–London, n = 9 (10.11%) England – East Midlands, n = 6 (6.74%) England – West Midlands, n = 5 (5.62%) England – Yorkshire and the Humber, n = 4 (4.49%) Wales, n = 3 (3.37%) Scotland, n = 2 (2.25%)
Employment status	Prefer not to say, n = 4 (4.49%) Full-time employment (NHS/public sector), n = 44 (49.44%) Part-time employment (NHS/public sector), n = 42 (47.19%) Part-time employment (private practice), n = 1 (1.12%) Other, n = 1 (1.12%) Prefer not to say, n = 1 (1.12%)

(Part-time sonographer, aged 51–60)

Battle scars – the lasting damage of COVID-19

Most sonographers described how the pandemic had a considerable, and long-standing negative impact on their psychological and mental health. In the early stages, they experienced significant distress at being “sat cuddled up to patients” for extended periods of time whilst scanning, or felt upset after giving unexpected news to pregnant mothers and people who had been scanned without a support person. Later, increasing numbers of parental complaints and episodes of aggression prompted sonographers to withdraw because of emotional exhaustion and burnout. Complaints received were often not considered valid (“you have ruined my gender reveal scan”), and sonographers felt personally attacked for encouraging mask-wearing and physical distancing in scan rooms. They were also deeply distressed by abuse received from parents via unmoderated social media platforms, some of which was individually targeted. A heightened perception of public disrespect for sonographers was further reinforced by the stark contrast of praise and recognition given to other healthcare services.

“I felt the population clapped for the NHS but sonographers were abused verbally at work and on social media.”

(Full-time sonographer, aged 51–60)

Lack of support from senior staff who failed to respond adequately to online comments further increased anxiety levels in sonographers. This caused sonographers to question their trust in their employers, as well as their future careers, with many actively seeking to leave obstetric ultrasound or sonography as a result.

What people think I do vs. what I really do

This theme captures the perceived disconnect between the way sonographers understand their role, and how they considered others to. They expressed disappointment and frustration with the portrayal of scans as entertainment for expectant parents, their families, and friends.

“Feel as though the medical element of ultrasound is no longer important and that patients are obsessed with ultrasound as an entertainment scan and gender scan.”

Table 2
Key themes and codes.

Theme	Definition	Codes	Illustrative quotations
Continuity in a crisis	The professional and personal values of obstetric sonographers is what really facilitated service continuity during the pandemic	<ul style="list-style-type: none"> • Actions taken to mitigate risk • Variation in interpretation and implementation of guidance • Parents are the priority • COVID-19 impact on workload • Making a difference • Working in a team 	<p>“... the department has done an incredible job implementing what they can. Keeping the service afloat has been a monumental effort.”</p> <p>“We were very aware of making the scan as good of an experience as possible ...”</p>
Decisions about me, without me	Feeling excluded and let down by professional colleagues	<ul style="list-style-type: none"> • What about us? • Distrust in risk assessment procedures • Feeling underrepresented and unsupported • Job demands and (lack of) resources • Sonographers are expendable 	<p>“They [senior management] often changed things without including our opinion or allowing us to discuss them.”</p> <p>“They [senior management] did not support sonographers when we highlighted that it is not possible to socially distance in some of our smaller scan rooms. The discussion was just shut down and we were told to get on with it.”</p>
Battle scars – the lasting damage of COVID-19	Occupational burnout and psychological distress in the aftermath of the pandemic	<ul style="list-style-type: none"> • Moral injury • Pouring from an empty cup • Safety in the scan room • Unsocial media • The future of obstetric ultrasound is uncertain 	<p>“I fear that many people will have already made their minds up to walk away from obstetric scanning.”</p> <p>“The social media campaigns have been demoralising, inane and disgusting towards our profession. This will undoubtedly affect sonographers and the future of obstetric ultrasound.”</p>
What people think I do vs. what I really do	Obstetric sonographers' frustration in the public lack of understanding and acknowledgement for the profession	<ul style="list-style-type: none"> • Scanning is multifaceted • Lack of recognition and understanding of the profession • Public perception of sonographers • The entertainment factor 	<p>“We are not an entertainment industry but skilled medical professionals who deserve appropriate recognition.”</p> <p>“... many see the scans as a social event and not a diagnostic test with a purpose.”</p>
The human touch	Finding satisfaction in quality interpersonal connections with expectant parents	<ul style="list-style-type: none"> • Sonographers as support • Positive sonographer experiences • Communication is key to role satisfaction • Feeling valued and important 	<p>“... I felt that I made a real difference ...”</p> <p>“I still enjoy my job and find it rewarding and that I am important in the role that I do.”</p>

(Part-time sonographer, aged 31–40)

In these scenarios, sonographers felt their clinical expertise was being undermined. An inferred emphasis on the parent experience placed them in an uncomfortable position where they felt the pressure of balancing the potential risk of failing to detect an unexpected fetal condition with that of receiving criticism from parents.

“Constant worry about missing pathology because you are too busy trying to make experience nice for patient [...] because you are worried about getting a complaint.”

(Full-time sonographer, aged 41–50)

Some sonographers described how parents' use of private ultrasound clinics (both prior and during the pandemic) contributed to the disparity between medical and social elements of scans by setting unrealistic expectations for parents and conflating ultrasound screening and diagnosis with the promise of a fun, family experience. Respondents called for initiatives to improve public and professional understanding of the role following the pandemic.

“It is imperative we are not seen as entertaining clowns but an essential part for the medical profession.”

(Full-time sonographer, aged 41–50)

The human touch

Despite its challenges, the pandemic presented an opportunity for some sonographers to return to their core professional values in providing high quality parent-centred care. They were emotionally responsive to expectant parents' needs and desires to share the

scan with a fellow human, and whilst attendance restrictions were in place, they extended their roles to act as default companions, offering temporary social support during the scan appointment. This working relationship was gratifying for sonographers who described feeling more engaged and appreciated in their role through the enhanced connection.

“Many [mothers] interacted with me in a way that they wouldn't if their partner was there.”

(Full-time sonographer, aged 51–60)

Without additional attendees, sonographers felt better able to focus their attention on the individual they were scanning. They described how this facilitated a richer, more personal scan experience that was more aligned to the purpose of the scan and created a safe and trusting environment in the scan room. As a result, many observed increased disclosure of additional issues such as domestic violence. These positive interactions helped sonographers to feel valued and satisfied in their roles, despite the challenges of working during the pandemic.

“[I] ... did consider leaving the NHS at the beginning but felt that I do love my job and I do feel that I have been important to the women I've scanned.”

(Part-time sonographer, aged 31–40)

Discussion

The themes generated depict UK obstetric sonographers' experiences of facilitating the continuity of obstetric ultrasound services during the COVID-19 pandemic. Sonographers relied on their strong professional values and sense of duty to overcome challenges in the interpretation and implementation of new guidance and avoid disruption to antenatal care provision. However, their

efforts were not felt to be fully appreciated or supported, resulting in reduced trust and increased disengagement from leadership and management figures. The themes reflect the occurrence of moral injury amongst sonographers, who, despite this, continued to engage with their role, finding satisfaction in team-working, deeper connections with pregnant women and people, and the application of their specialist ultrasound knowledge and skills.

Occupational moral injury

In addition to concerns around the risk of contracting COVID-19 and personal safety within the scan room, disconnect from senior professional colleagues was identified in this analysis as a longer-term influence on the psychological well-being of obstetric sonographers. Feelings of disappointment were consistent across all but one of the themes generated (“the human touch”), and were evoked in response to sonographers’ perception that their normative expectations of senior management, professional organisations, and the general public had been violated. Sonographers felt let down by senior management and professional organisations because of the perceived inadequacy and lack of visible leadership, which may have been interpreted as contradictory to recommendations emphasising the importance of authoritative figures being present during a time of crisis for staff support.³⁹ Sonographers also felt dismissed when concerns shared over safety in the scan room were not taken seriously. This finding was not unique to this analysis, with failures in PPE provision reported as a major cause of distress in UK healthcare professionals.⁴⁰ A study of Australasian workers also reported feeling shamed and victimised when asking for higher-grade PPE.⁴¹ Dismissal of concerns by senior managers can be perceived as a lack of care, and causes staff to question their position as a valued team member or dispensable object,⁴² in this case, merely an extension of the ultrasound machine.

Occupational moral injury and parent-centred care

Occupational moral injury in healthcare professionals has been dubbed as the “hidden pandemic” of COVID-19,⁴¹ however it was not just ineffective leadership that was identified as morally injurious in this study. Obstetric sonographers also felt let down by expectant parents and the public who displayed threatening behaviour and directed abuse towards them, most often regarding the restrictions around partner attendance. As sonographers identified themselves as the victims in this situation, expectant parents also experienced feelings of disappointment; that these restrictions were not in their best interests,⁴³ resulting in a mutual withdrawal of trust.

Trust is integral to parent-centred care, as it underpins the relationship between the sonographer and the expectant parent.⁴⁴ Trust in healthcare professionals develops from both an understanding and appreciation of clinical skills, as well as demonstration of “humaneness” through compassion and care.⁴⁵ The parent-sonographer relationship is acknowledged as complex,⁴⁶ and development of trust can be challenging in the obstetric setting. As highlighted in this analysis, it was hindered by the COVID-19 pandemic. Survey responses suggested that lack of public recognition and awareness for obstetric sonographers’ clinical role could be explained by the absence of statutory regulation for the workforce. This failure to acknowledge sonography as a distinct occupation creates ambiguity around the role, and as such lowers the public profile of sonographers and recognition of specialist clinical skills.⁴⁷ This can be further confused by the rise in popularity of private scanning clinics which promote more social aspects of obstetric ultrasound.⁴⁸ In addition, it may be considered that guidance recommending shorter scan times and the restriction of partners

and supporting persons at scans during the pandemic⁴ were not conducive to developing the trusting parent-sonographer relationship and the subsequent perception of high-quality care.⁴⁹ However, obstetric sonographers did not consider these as significantly impactful on their communication with expectant parents during scans.¹⁹ Instead, efforts to enhance interactions with parents during the peak of the pandemic restrictions, as described in the final theme, suggest incidences of psychological growth in response to the situational trauma,⁵⁰ whereby sonographers made positive changes to their practice to ensure the provision of parent-centred care.

Moral repair and recovery

Recovery following moral injury is essential to prevent progression to burnout¹² and the development of deeper psychological trauma.¹⁴ The context-driven nature of moral injury and burnout suggests that initiatives at the individual level (e.g. practising mindfulness, resiliency training) are likely to be ineffective in the longer term.^{51,52} Therefore, structural reform is urgently required to support post-pandemic recovery of the workforce. However, unlike mitigation for occupational burnout which may attempt to reduce job demands and increase resources for workers,⁵³ moral repair requires that the “moral equilibrium” between the perpetrator and the victim is re-established, such that trust can be restored.⁵⁴

Shale describes a 7-point framework for moral repair that places the notion of acknowledgement firmly at the centre of trust restoration.¹⁵ This includes acknowledgement that moral injury has occurred, acknowledgement of responsibility for causing harm, acknowledging the feelings of those who have been injured, and acknowledging what is required to rectify the wrong. These are fundamental components of an apology, which is used as the first step to facilitate resolution between two parties after a moral violation.⁵⁵ Apologies are moral acts, integral to the practice of ethical leadership, as they provide an opportunity for individuals to publicise their values and present themselves as figures of integrity who are worthy of trust and respect.⁵⁶

In the first instance, the findings of this analysis call for effective and ethical leadership in the aftermath of the COVID-19 pandemic, whereby individuals are seen to demonstrate and promote normatively appropriate conduct to their followers.⁵⁷ This leadership approach has been associated with increased job satisfaction and staff morale, and reduces burnout by encouraging positive working environments⁵⁸ because of its focus on two-way communication, reinforcement of common moral values, and practice of shared decision-making.⁵⁵ Interprofessional teamwork in collaboration with Maternity Voices Partnerships is also needed to rebuild trust between sonographers, parents and professional groups, as highlighted in recent reports reviewing maternity services in England^{59,60} and Wales.⁶¹

Strengths and limitations

The study findings provide qualitative context which help to explain previously reported high levels of occupational burnout in obstetric sonographers.¹⁹ Although limitations inherent in the sampling strategy are acknowledged,⁶² survey responses were received from sonographers who were working across all regions of the UK during the COVID-19 pandemic, which has enabled good geographical representation of obstetric ultrasound departments. The sample size was comparable with another recent study involving UK sonographers.⁶³ Respondents were predominantly female and white, which is reflective of the current workforce,⁶⁴ and advantageous from the qualitative perspective because the sample is relatively homogeneous.⁶⁵ However, it must be

recognised that the experiences of male or ethnic minority sonographers may be different. Due to the cross-sectional nature of the survey, self-selecting population and timing of data collection, findings may not be transferable outside of the study setting,⁶⁶ and follow-up research may be beneficial. The theoretical principles of thematic analysis preclude the use of established quality practices (e.g. member checking) to determine credibility of the findings.⁶⁷ An alternative practice (member reflection) was utilised,³⁸ whereby sonographers reviewed a near-final draft of this manuscript to confirm the developed themes were consistent with their experiences.

Conclusion

This analysis provides qualitative context to previous research findings of occupational burnout within the workforce, highlighting sonographers' moral injury through perceptions of ineffective and invisible leadership and management during the pandemic as a key contributing factor. Failure to urgently acknowledge and appropriately repair the harm experienced by obstetric sonographers is likely to exacerbate occupational burnout at the detriment of staff well-being and high-quality parent-centred care. Senior figures must work in collaboration with sonographers to rebuild trust and recreate supportive working environments. Additionally, whilst positive interactions with expectant parents in the scan room were identified as integral to role satisfaction, this is often undermined by a lack of understanding of the clinical aspect of pregnancy ultrasound, and future efforts should be made to raise awareness of the sonographer's role amongst service users and the public.

Declaration of competing interest

GH is the Professional Officer for Ultrasound at the Society and College of Radiographers.

Author contributions

ES and CM conceptualised the study. All authors developed the study design. ES analysed the data and drafted the paper. All authors revised the paper for publication.

Ethical approval

This study was granted approval from the School of Health and Psychological Sciences Research Ethics Committee at City, University of London (reference: ETH2021-1240, approval date: 09 March 2021). All participants gave their informed consent prior to accessing the online survey, which included giving their permission to use anonymised quotations for research presentation and publication.

Funding

This work was funded by the College of Radiographers' Doctoral Fellowship Award (DF017) and the School of Health and Psychological Sciences at City, University of London. Funding from the City Radiography Research Fund has been instrumental for the dissemination of this research. The funders were not involved in the study design, analysis, interpretation or writing of this manuscript.

Data availability

Due to the nature of this research, participants of this study did not agree for their data to be shared publicly, so supporting data is not available for distribution.

Acknowledgements

The authors would like to thank members of the Society of Radiographers' Ultrasound Advisory Group who reviewed the online questionnaire. Finally, to all the obstetric sonographers who gave their time to participate in this research study during a challenging time, thank you.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.radi.2023.03.007>.

References

- Majeed A, Maile EJ, Bindman AB. The primary care response to COVID-19 in England's National Health Service. *J R Soc Med* 2020;**113**:208–10.
- Royal College of Obstetricians and Gynaecologists. *Guidance for antenatal screening and ultrasound in pregnancy in the evolving coronavirus (COVID-19) pandemic*. 2020 [Online] Available at: <https://www.rcm.org.uk/media/3837/guidance-for-antenatal-and-postnatal-services-in-the-evolving-coronavirus-pandemic-rcm-and-rcog.pdf>. [Accessed 13 January 2023].
- Society of Radiographers. *Covid-19: ultrasound frequently asked questions* [Online] Available at: <https://covid19.sor.org/diagnostic-radiography-faqs/ultrasound/>, 2021. [Accessed 13 January 2023].
- International Society of Ultrasound in Obstetrics and Gynecology. *ISUOG Consensus Statement on organization of routine and specialist ultrasound services in the context of COVID-19*. 2020 [Online] Available at: <https://www.isuog.org/static/3622f29b-f189-4165-93024c4bf2ad6e8a/ISUOG-Consensus-StatementCOVID-19.pdf>. [Accessed 13 January 2023].
- The Society and College of Radiographers. *Obstetric ultrasound examinations during the Covid-19 pandemic*. 2020 [Online] Available at: https://www.sor.org/getmedia/d2ec6e28-e21f-4f7b-a416-6c09d560d717/obstetric_ultrasound_examinations_during_the_covid-19_pandemic_v2.pdf.2. [Accessed 13 January 2023].
- Thomas JP, Srinivasan A, Wickramarachchi CS, Dhesi PK, Hung YMA, Kamath AV. Evaluating the national PPE guidance for NHS healthcare workers during the COVID-19 pandemic. *Clin Med J R Coll Physicians London* 2020;**20**:242–7.
- Monaghesh E, Hajizadeh A. The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Publ Health* 2020;**20**:1–9.
- NHS England and NHS Improvement, Rollout of lateral flow devices for asymptomatic staff testing for SARS CoV-2 (phase 2: trusts), 2020 [Online] Available at: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/11/C0873_i_SOP_LFD-rollout-for-asymptomatic-staff-testing_phase-2-trusts-v1.1_16-nov20.pdf. (Accessed 13 January 2023).
- Lamb D, Gnanapragasam S, Greenberg N, et al. Psychosocial impact of the COVID-19 pandemic on 4378 UK healthcare workers and ancillary staff: initial baseline data from a cohort study collected during the first wave of the pandemic. *Occup Environ Med* 2021;**78**:801–8.
- Batra K, Singh TP, Sharma M, Batra R, Schvaneveldt N. Investigating the psychological impact of COVID-19 among healthcare workers: a meta-analysis. *Int J Environ Res Public Health* 2020;**17**:1–33.
- Chigwedere OC, Sadath A, Kabir Z, Arensman E. The impact of epidemics and pandemics on the mental health of healthcare workers: a systematic review. *Int J Environ Res Public Health* 2021;**18**:6995.
- Rosen A, Cahill JM, Dugdale LS. Moral injury in health care: Identification and repair in the COVID-19 era. *J Gen Intern Med* 2022;3739–43.
- Litz BT, Stein N, Delaney E, Lebowitz L, Nash WP, Silva C, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev* 2009;**29**:695–706.
- Shay J. Moral injury. *Psychoanal Psychol* 2014;**31**:182–91.
- Shale S. Moral injury and the COVID-19 pandemic: Reframing what it is, who it affects and how care leaders can manage it. *BMJ Lead* 2020;**4**:224–7.
- Jain S, Lucey C, Crosson F. The enduring importance of trust in the leadership of healthcare organisations. *JAMA, J Am Med Assoc* 2020;**324**:2363–4.
- French L, Hanna P, Huckle C. "If I die, they do not care": U.K. National health service staff experiences of betrayal-based moral injury during COVID-19. *Psychol trauma theory. Res Pract Policy* 2022;**14**:516–21.
- Dean W, Talbot S, Dean A. Reframing Clinician distress: moral injury not burnout. *Fed Pract* 2019;**36**:400–2.

19. Skelton E, Harrison G, Rutherford M, Ayers S, Malamateniou C. UK obstetric sonographers' experiences of the COVID-19 pandemic: burnout, role satisfaction and impact on clinical practice. *Ultrasound* 2022;1–11.
20. Skelton E, Malamateniou C, Harrison G. The impact of the COVID-19 pandemic on clinical guidance and risk assessments, and the importance of effective leadership to support UK obstetric sonographers. *J Med Imaging Radiat Sci* 2022;53:S107–15.
21. McInally L, Gardiner E. COVID-19: obstetric sonographers' working experiences during the pandemic. *MIDIRS Midwifery Dig* 2022;32:328–34.
22. Childs J, Lamb K, Osborne B, Maranna S, Esterman A. The initial impact of COVID-19 on Australasian Sonographers Part 1: changes in scan numbers and sonographer work hours. *Sonography* 2021;8:90–9.
23. Childs J, Maranna S, Osborne B, Lamb K, Esterman A. The initial impact of COVID-19 on Australasian sonographers part 2: changes to sonographic examination protocols and access to personal protective equipment. *Sonography* 2021;8:100–8.
24. Childs J, Osborne B, Lamb K, Maranna S, Esterman A. The initial impact of COVID-19 on Australasian sonographers part 3: sonographer professional, personal, and social wellbeing. *Sonography* 2021;8:109–15.
25. Bourne T, Kyriacou C, Shah H, Ceusters J, Preisler J, Metzger U, et al. Experiences and well-being of healthcare professionals working in the field of ultrasound in obstetrics and gynaecology as the SARS-CoV-2 pandemic were evolving: a cross-sectional survey study. *BMJ Open* 2022;12:1–12.
26. The Society and College of Radiographers. *Ultrasound workforce UK Census 2019* [Online] Available at: https://www.sor.org/getmedia/cb5f34dd-15b2-4595-a37b-7ebdc4bb8d4f/ultrasound_workforce_uk_census_2019.pdf_2, 2019. [Accessed 13 January 2023].
27. Levitt H, Bamberg M, Creswell J, Frost D, Josselson R, Suárez-Orozco C. Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: the APA publications and communications board task force report. *Am Psychol* 2018;73:24–46.
28. Qualtrics. *Qualtrics XM*. 2020 <https://www.qualtrics.com>.
29. Institute for Government. *Institute for Government. Timeline UK Gov. coronavirus lockdowns*, <https://www.instituteforgovernment.org.uk/sites/default/files/timeline-lockdown-web.pdf>, 2021. [Accessed 21 February 2023].
30. Thornton J. Clinical trials suspended in UK to prioritise covid-19 studies and free up staff. *BMJ* 2020;368:m1172.
31. Demerouti E, Bakker AB, Vardakou I, Kantas A. The convergent validity of two burnout instruments: a multitrait-multimethod analysis. *Eur J Psychol Assess* 2003;19:12–23.
32. Barkham M, Bewick B, Mullin T, Gilbody S, Connell J, Mellor-Clark J, et al. The CORE-10: a short measure of psychological distress for routine use in the psychological therapies. *Couns Psychother Res* 2013;13:3–13.
33. Microsoft Corporation. *Microsoft Excel*; 2018.
34. QSR International Pty Ltd. *NVivo (version 12)*. 2018.
35. Braun V, Clarke V, Boulton E, Davey L, McEvoy C. The online survey as a qualitative research tool. *Int J Soc Res Methodol* 2021;24:641–54.
36. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3:77–101.
37. Braun V, Clarke V. *Thematic analysis: a practical guide*. 1st ed. London: SAGE Publications; 2022.
38. Tracy SJ. Qualitative quality: Eight 'big-tent' criteria for excellent qualitative research. *Qual Inq* 2010;16:837–51.
39. Walton M, Murray E, Christian MD. Mental health care for medical staff and affiliated healthcare workers during the COVID-19 pandemic. *Eur Hear J Acute Cardiovasc Care* 2020;9:241–7.
40. Professional Standards Authority. *Ethics in extraordinary times: Practitioner experiences during the COVID-19 pandemic*. 2021 [Online] Available at: https://www.professionalstandards.org.uk/docs/default-source/publications/research-paper/ethics-in-extraordinary-times.pdf?sfvrsn=881d4920_7. [Accessed 13 January 2023].
41. Anada-Rajah M, Veness B, Berkovic D, Parker C, Kelly G, Ayton D. Hearing the voices of Australian healthcare workers during the COVID-19 pandemic. *BMJ Lead* 2021;5:31–5.
42. Farmer A, Bessa L. *Female in the military: a case study of invisibility and betrayal*. In: *Intersections Women's and gender studies in review across Disciplines*. 2011. p. 32–47.
43. Thomson G, Balaam MC, Nowland R, Crossland N, Moncrieff G, Heys S, et al. Companionship for women/birthing people using antenatal and intrapartum care in England during COVID-19: a mixed-methods analysis of national and organisational responses and perspectives. *BMJ Open* 2022;12:1–12.
44. Thomas S, O'Loughlin K, Clarke J. Organisational and professional structures shaping the sonographer role in obstetrics. *Sonography* 2016;3:125–33.
45. Peters S, Bilton D. *'Right-touch' trust: Thoughts on trust in healthcare*. Routledge Companion to Trust; 2018. p. 330–47.
46. Thomas S, O'Loughlin K, Clarke J. Sonographers' communication in obstetrics: challenges to their professional role and practice in Australia. *Australas J Ultrasound Med* 2020;23:129–39.
47. Sevens T. *The benefits and challenges of employing new sonography Graduates: key Stakeholder Views*. Doctoral thesis. Sheffield Hallam University; 2017. [Online] Available at: https://shura.shu.ac.uk/16596/1/TSevens_2017_DP_Thebenefitsand_VoR.pdf. [Accessed 13 January 2023].
48. Thomas GM. Picture perfect: '4D' ultrasound and the commoditisation of the private prenatal clinic. *J Consum Cult* 2015;17:359–77.
49. Skelton E, Smith A, Harrison G, Rutherford M, Ayers S, Malamateniou C. 2022 [Unpublished results, under review].
50. Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ* 2020;368:1–4.
51. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. *Lancet* 2009;374:1714–21.
52. Sriharan A, Ratnapalan S, Tricco AC, Lupea D. Women in healthcare experiencing occupational stress and burnout during COVID-19: a rapid review. *BMJ Open* 2021;11:e048861.
53. Demerouti E, Nachreiner F, Bakker A, Schaufeli W. The job demands-resources model of burnout. *J Appl Psychol* 2001;86:499–512.
54. Anderson-Wallace M, Shale S. Restoring trust: what is 'quality' in the aftermath of healthcare harm? *Clin Risk* 2014;20:16–8.
55. Cels S. Saying sorry: ethical leadership and the act of public apology. *Leadersh Q* 2017;28:759–79.
56. Brown ME, Treviño LK. Ethical leadership: a review and future directions. *Leadersh Q* 2006;17:595–616.
57. Markey K, Ventura CAA, Donnell CO, Doody O. Cultivating ethical leadership in the recovery of COVID-19. *J Nurs Manag* 2021;29:351–5.
58. Brown ME, Treviño LK, Harrison DA. Ethical leadership: a social learning perspective for construct development and testing. *Organ Behav Hum Decis Process* 2005;97:117–34.
59. Ockenden D. *Findings, conclusions and essential actions from the independent review of maternity services at the Shrewsbury and Telford Hospital NHS Trust* [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1064302/Final-Ockenden-Report-web-accessible.pdf, 2022. [Accessed 13 January 2023].
60. Kirkup B. *Reading the signals: maternity and neonatal services in East Kent - the report of the independent investigation* [Online] Available at: <https://www.gov.uk/government/publications/maternity-and-neonatal-services-in-east-kent-reading-the-signals-report>, 2022. [Accessed 13 January 2023].
61. The Royal College of Midwives, Royal College of Obstetricians and Gynaecologists. *Review of maternity services at Cwm Taf health board* [Online] Available at: https://www.gov.wales/sites/default/files/publications/2019-04/review-of-maternity-services-at-cwm-taf-health-board_0.pdf, 2019. [Accessed 13 January 2023].
62. Sadler GR, Lee HC, Lim RSH, Fullerton J. Recruitment of hard-to-reach population subgroups via adaptations of the snowball sampling strategy. *Nurs Heal Sci* 2010;12:369–74.
63. Johnson J, Arezina J, McGuinness A, Culpam AM, Hall L. Breaking bad and difficult news in obstetric ultrasound and sonographer burnout: is training helpful? *Ultrasound* 2019;27:55–63.
64. Centre for Workforce Intelligence. *Securing the future workforce supply: sonography workforce supply* [Online] Available at: <https://www.gov.uk/government/publications/review-of-the-sonography-workforce-supply>, 2017. [Accessed 13 January 2023].
65. Jager J, Putnick DL, Bornstein MH. More than just convenient: the scientific merits of homogeneous convenience samples. *Monogr Soc Res Child Dev* 2017;82:13–30.
66. Wang X, Cheng Z. Cross-sectional studies: Strengths, Weaknesses, and recommendations. *Chest* 2020;158:S65–71.
67. Varpio L, Ajjawi R, Monrouxe LV, O'Brien BC, Rees CE. Shedding the cobra effect: Problematising thematic emergence, triangulation, saturation and member checking. *Med Educ* 2017;51:40–50.