NHS Sonographers Scope of Practice

BMUS

Survey by the British Medical Ultrasound Society

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Executive Summary

Background. In April 2021 the British Medical Ultrasound Society, via an online questionnaire, surveyed sonographers working in the UK National Health Service. The aim was to explore roles, responsibilities, practice levels and job satisfaction.

Demographics. There were 300 respondents, most were radiographers by background (73%) and the majority were practising in England. Responses from those in Wales, Scotland and Northern Ireland were low. Nearly half of all participants were over 50 years old, 87% were female and 13% male. Part-time workers comprised 60% and 40% were full-time.

Practice levels. There was a lack of consistency regarding job titles, pay grades and practice levels. A total of 81% of respondents were practising at advanced level or above when it came to meeting criteria for the clinical and educational pillars of practice, as outlined in the *Multiprofessional framework for advanced clinical practice in England*. These figures indicate a high performing workforce committed to delivering high-quality patient care and meeting educational needs of others. However, far fewer participants were fulfilling the leadership and research pillars and only 25% were fulfilling all four pillars at once.

Advanced clinical practice was most common in obstetric ultrasound. The most common clinical areas for consultant level practice were musculoskeletal and head and neck ultrasound. Few participants undertook prostate or breast ultrasound.

Free text comments. The majority of free text responses related to low job satisfaction, a perceived lack of support from managers, growing stress levels and increasing staff shortages within the working environment. Job satisfaction was obtained often through collaborative working, committee and special interest group membership, and influencing patient care.

Recommendations. A significant portion of the workforce may retire or leave the NHS in the near future, which could limit service delivery in an already overstretched cohort. Prompt strategies are needed to offset this potential exodus.

Efforts to standardise job titles and roles may reduce inequity reported by respondents and may enable smoother implementation of the *Career and Progression Framework*, thus facilitating a fairer, more attractive and more structured ultrasound career for the current and future workforce.

More leadership and research activities need to be identified by sonographers and valued by managers to enable greater numbers to reach full advanced practitioner status or higher and to help retention within the NHS. Opportunities could include conducting in-house audit and accepting advisory/supporting roles with national organisations.

Conclusion. Ultrasound practice varies widely across England although most sonographers are working clinically at advanced level. Development opportunities are inconsistent, and respondents report low morale and high stress levels. Fair and progressive career development opportunities are needed urgently to minimise attrition and maximise growth of this most valuable workforce.

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1.0 Introduction

For many years there has been, and continues to be, a shortage of suitably qualified sonographers in the United Kingdom (UK).[1,2] This situation is exacerbated by increasing demand for all ultrasound scans and especially within obstetrics. In an attempt to mitigate the problem, new strategies for recruiting and educating student sonographers have been explored including apprenticeships, undergraduate 'direct-entry' programmes and postgraduate programmes recruiting students from non-traditional backgrounds. However, the success of these strategies is dependent on multiple factors including; the need to ensure that a career in ultrasound is attractive, the availability of training places, the implementation of a fair and transparent career pathway and the introduction of statutory regulation.

A clear career progression pathway for the sonography workforce is well-developed[3] but its effectiveness depends partly on how well it can be integrated into current working patterns within UK National Health Service (NHS) ultrasound departments. There is wide variation in roles and duties of NHS sonographers and wide variation in what is considered standard, advanced and consultant level practice. Anecdotally, many sonographers over the years have gradually taken on more responsibility regarding patient management, research and training, while others have felt their own training and development have stalled due to reaching the top of their pay band. Therefore, the aim of this scoping exercise was to:

a) map current clinical and non-clinical roles and responsibilities of NHS sonographers to establish patterns in levels of practice
b) investigate job satisfaction and explore related barriers and incentives

2.0 Method

A working group on behalf of BMUS identified duties and activities relating to four levels of ultrasound practice; practitioner at the preceptee level, senior, advanced and consultant level, as defined by the Health Education England (HEE) Career and Progression Framework[3] (CPF). Roles associated with advanced practice were identified from the HEE Advanced Clinical Practice framework's four pillars of practice[4]. These roles and activities formed the basis for the development of a questionnaire to explore service evaluation of NHS sonographers. The levels of clinical practice at which sonographers were working were defined accordingly –

Practitioner level: A newly qualified sonographer still under preceptorship. The phrase applied to their clinical activity is: *I report my scan findings provisionally. They are amended/verified by a senior member of staff and then passed to the referrer for action.*

Senior level: A qualified sonographer who has completed preceptorship and is now practising independently. The phrase applied to their clinical activity is: *I report my scan findings independently and pass to the referrer for action.*

Advanced level: An experienced sonographer with a high level of autonomy both clinically and through non-clinical activities relating to education, research, management and leadership. Advanced clinical practice is defined by the phrase; *I report my scan findings independently. I am*

responsible for interpreting my findings and making recommendations for, or arranging, further management as required.

Consultant level: An expert and leader within their field who manages a complex caseload. Consultant clinical practice was defined in the survey by the phrase; *I report my scan findings independently. I manage complex cases and perform interventional or therapeutic procedures in this specific area of practice. I am responsible for interpreting my findings and making recommendations for, or arranging, further management as required.*

It was recognised that some individuals, due to training, education and experience, may practise at a higher level in some clinical areas and a lower level in others.

Further questions explored qualifications, job titles, roles in education, research, management and leadership, multidisciplinary team meeting (MDT) attendance, and any additional posts held concurrently outside the NHS. A free text option was available for further comments at the end. The inclusion criterion for participation was any sonographer currently working in the UK NHS. Exclusion criteria were sonographers practising only for independent providers, academics with no NHS clinical position, and those qualified but not currently practising. Expert opinion for questionnaire content, structure and refinement was sought from clinical practitioners, BMUS officers and university ultrasound programme leaders. Staff at the Society of Radiographers and the Consortium for the Accreditation of Sonographic Education were also consulted.

The questionnaire was piloted on a convenience sample of 39 individuals to identify faults, improve clarity and make necessary modifications before inviting NHS sonographers to formally take part. The pilot responses were discarded.

The final version of the questionnaire was launched via SurveyMonkey™ online, comprised 48 closed and open questions, and took no more than 15 minutes to complete. It was publicised on the BMUS website, the BMUS weekly e-news bulletin and the Society of Radiographers' website and was live for a three-week period in April 2021. No incentives were offered to encourage participation and respondents could skip questions if desired. Informed consent was implied by submitting the survey. The study was GDPR compliant; anonymity and confidentiality were maintained.

Duties were mapped to practice levels. Descriptive statistics were used to compare activity, and thematic analysis by two researchers was applied to qualitative free text answers. Where results are represented as percentages these may not always add to 100 due to rounding.

3.0 Results

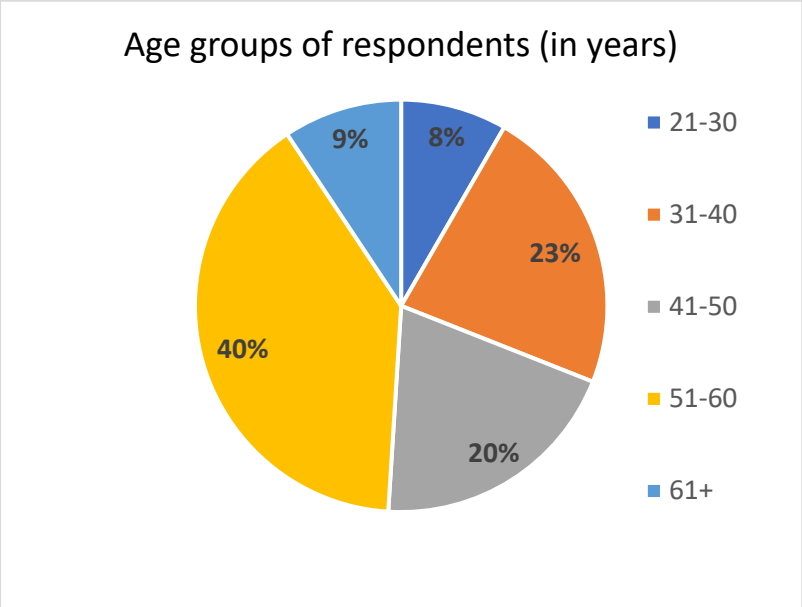
The questionnaire was live for three weeks and 300 participants responded. There was a 94% completion rate but responses from the 6% of incomplete questionnaires were also included in the results since data provided were still considered relevant and valuable.

3.1 Demographics

The majority (87%) of respondents were female, 13% were male and one person preferred not to say (<1%). There was a large percentage of male sonographers (44%) who were aged 40 years or younger compared with only 30% of females.

Almost half the respondents were over 50 years old (49% n= 147) (Figure 1). This may be due to an element of volunteer bias but also aligns with the known aging ultrasound workforce. Direct comparison with other reports cannot be made due to the use of different sampling methods but our figure for the over 50s is higher than that identified in the review by the Centre for Workforce Intelligence (2017) and in the Society and College of Radiographers' 2019 census, where around 30% of the workforce was estimated to be aged over 50.[1,2]

Figure 1. Age of respondents



A significant proportion of the cohort in our survey is likely to retire in the next ten years, which is a concern since sonography is a shortage profession.[2] Part-time workers comprised 60% of respondents and 40% were full-time.

Total numbers of survey participants from all three UK home nations other than England were low (11% combined versus 89% for England alone) so it is not possible to identify trends in groups outside England (Table 1).

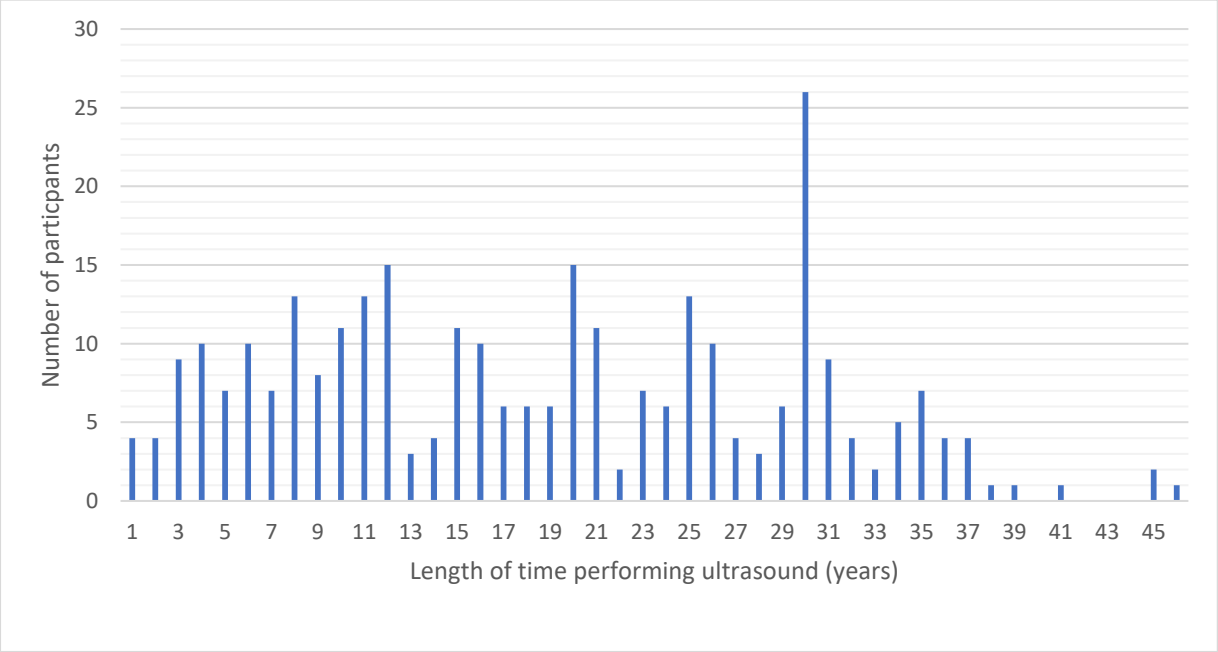
Table 1. Country in which respondents worked

Country	Respondents (out of 300)
England	268
Scotland	13
Wales	12
Northern Ireland	7

3.2 Length of time practising ultrasound

The survey attracted respondents with a broad range of experience; some had been practising ultrasound for only a year, while others had been using ultrasound for over 40 years. Many reported working in ultrasound for 30 years, which deviates from the general curve (Figure 2). This spike may have occurred due to respondents estimating their time in ultrasound but it also coincides with the transition in education from the Diploma in Medical Ultrasound to Master's level qualifications.

Figure 2. Length of time participants have been practising ultrasound



3.3 Professional background and qualifications

The initial professional background of sonographers includes diagnostic radiographers (73%), vascular scientists (9%), sonographers from direct entry courses in or outside the UK (7%), and 5% were nurses or midwives. Making up the remaining 6% were very small numbers of assistant practitioners (radiology), physicists, physiotherapists, physiologists, pharmacologists, biomedical scientists, biological scientists, medical scientists and podiatrists. One person stated they were a stenographer, which was identified as a typographical error, and another said they had no formal qualification or professional background.

Exactly 50% of respondents (150) hold postgraduate certificates or diplomas as their highest qualification in ultrasound, and 28% (84) have achieved a full Master's degree. Only 2% have completed a doctorate. A significant number (15% n=44) hold the DMU and 6% report BSc as their highest qualification. These were vascular scientists/sonographers rather than new UK direct entry BSc ultrasound graduates. Most other qualifications listed were that of Accredited Vascular Scientist by the Society for Vascular Technology of Great Britain and Ireland.

Just over half (51%, n = 20 of 39) of all male sonographers who responded had a Master's degree or higher compared with only 27% (n = 70 of 260) of females.

3.4 Job titles, pay grades and levels of practice

There seems to be little standardisation or defined boundaries when it comes to levels of sonographer practice and job title. This finding mirrors results from a recent study of radiographer practice[5]. For example, one practitioner had the title 'clinical specialist sonographer' yet never attended MDTs, did not contribute to research, had no management or leadership responsibilities and, regarding education, provided just one face-to-face training session per week. Another had the title 'senior sonographer' and fulfilled or exceeded all requirements for the four pillars of advanced practice. Furthermore, many practitioners reported having more than one title due to split roles.

Only 12 of 300 had the title 'consultant sonographer' but a total of 42 were identified from the data as practising clinically at consultant level regardless of job title, pay grade, or fulfillment of the remaining three pillars of practice. Two consultants had the title 'consultant radiographer' followed by their specialty, arguably because sonographer is not a protected title.

Almost two thirds (65%) of respondents were paid at *Agenda for Change* pay band 7, and 25% were paid at 8a. One had a split pay band of 7 for half the week and 8a the other. Only three participants (1%) were paid at bands 5 or 6, and 7% (21) were salaried at bands 8b, 8c, or 9. There was no standardisation of job title or role among the higher pay bands either. A limitation of the study is that band 8d was not offered as an option although, of the small numbers stating they were on alternative salary levels, none said 8d.

Sonographers with job title 'Consultant Sonographer'

All 12 respondents who held the job title 'consultant sonographer' were from a radiographic background. One was under 40 years old, five were between 41 and 50, while six (50%) were 51 or older. The shortest time period practising ultrasound was 10 years, the longest was 35 years. All were paid within the band 8 range.

Table 2. Practice as stated by those with the job title 'Consultant Sonographer'

A = duties associated with advanced level practice
C = duties associated with consultant level practice

	Highest qualification	Advanced level clinical practice in some areas	Consultant level clinical practice in some areas	Management and leadership duties	Teaching duties	Research duties
1	MSc	Yes	Yes	C	C	C
2	MSc	Yes	Yes	A	C	None
3	PgD	Yes	No	C	A	A
4	MSc	Yes	Yes	C	C	C
5	MSc	Yes	Yes	None	A	None
6	PgD	Yes	No	A	A	A
7	MSc	No	Yes	A	C	A
8	MSc	No	Yes	C	C	A
9	MSc	Yes	Yes	None	C	None
10	MSc	Yes	Yes	C	C	C
11	MSc	Yes	Yes	None	C	A
12	PgD	Yes	Yes	A	C	C

Only 10 of these 12 were deemed to be practising clinically at consultant level in that they were performing interventional examinations and/or handling complex caseloads[3] in at least one clinical area e.g. gynaecology or MSK.

Two respondents' answers indicated that their clinical practice matched that of an advanced level practitioner in all areas where they worked. Only nine were involved in research and only three were deemed to be fulfilling all four domains (clinical expertise, education, management and leadership, research) at consultant level. Therefore, from the small cohort of 12 with the job title 'consultant' only three (25%) appeared to be practising fully at consultant level according to existing frameworks (Table 2).[3,4]

One consultant respondent did not appear to have a complex or interventional caseload, and their research, education and leadership roles with which they identified were those associated with advanced practice rather than consultant practice. Three of the consultants had only a postgraduate diploma in ultrasound as their highest qualification. None held a PhD. Two claimed to rarely or never attend MDTs both stating they were too busy.

Sonographers with job title 'Advanced Practice Sonographer'

In total, 42 respondents (14%) held the job title 'advanced practice sonographer'. Only two were aged between 21 and 30 years, seven were 31 to 40 and the remaining 83% (n=33) were over 40. All were in England, 37 were female, four male and one skipped the question. The qualifications held by this group were broad; one had a PhD, eight held an MSc and 20 had postgraduate diplomas. Seven had the DMU, five had postgraduate certificates, and one had a BSc degree.

The backgrounds of the advanced practice sonographers varied but most (37) were radiographers. There was also a midwife, biomedical scientist, clinical vascular scientist, and two sonographers. All were salaried at bands 7 or 8a.

Most of their clinical practice was described as at least advanced level, in that they independently interpreted and reported their findings and made onward management decisions for the patient although five (12%) stated they only described appearances and sent this information to the referring clinician to manage. All were involved with one-to-one teaching and 88% (n = 37) were also involved with other teaching duties associated with advanced practice. However, smaller numbers were fulfilling the leadership and research aspects of advanced practice. Only 14 of 42 (35%) had managerial or leadership responsibilities and just 10 had research involvement.

From the cohort of 42 with the job title 'advanced practice sonographer', only six (14%) appeared to truly fulfill or exceed all four pillars of advanced practice as defined by HEE.[4]

Clinical level of practice regardless of job title

The majority (67%) of the 300 respondents felt they were working at the correct level for their ability but almost a third (31%) felt underused compared to the skills/knowledge they have. The remaining very small numbers of participants felt out of their depth or had mixed feelings about their role due to different levels of ability in different clinical areas. Invariably, this was down to ongoing training in a new area rather than being utilised in areas without the required clinical knowledge or support.

Practitioner and Senior Practitioner level

Only two respondents were practising clinically at practitioner level in all areas (<1%). This means that although some respondents may have their reports checked in one clinical area, they are

assumed proficient and working independently in others. A total of 37 (12%) respondents were practising clinically at senior level in all areas in that they produced independent reports for the referrer to act on.

Advanced and Consultant Practitioner level

A total of 213 (71%) respondents were practising clinically at advanced level in at least one area and 42 (14%) were practising clinically at consultant level in at least one area. In these two categories, sonographers directly influence patient management. There was, however, wide disparity between practice depending on the clinical area highlighted.

The clinical environments where sonographers most often stated they were operating at advanced level were obstetrics, gynaecology, general medical including testicular scanning, and musculoskeletal. Numbers were very small for some areas of clinical activity such as breast, prostate, head and neck but in these environments, there were greater proportions of sonographers working autonomously as either advanced or consultant level clinical practitioners (Table 3).

Since numbers who perform prostate and breast scans were very small, we considered those separately (see below). For the remaining eight common clinical areas, the majority of the workforce reported to work at advanced practitioner level (in bold).

Table 3. Level of clinical practice in each specific area as chosen by respondents

Clinical area	Participants practising in this area out of a total of 300	Level of clinical practice as chosen by the participants from the descriptors offered in the survey				
		Practitioner	Senior Practitioner	**Advanced**	Consultant	Did not say
Early pregnancy	151	1 (<1%)	61 (40%)	**86 (57%)**	3 (2%)	0
Obstetrics	154	2 (2%)	30 (19%)	**121 (79%)**	1 (<1%)	0
Gynaecology	214	5 (2%)	57 (27%)	**143 (67%)**	8 (4%)	1
General and or Testicular	202	3 (2%)	45 (22%)	**144 (71%)**	10 (5%)	0
Head and Neck	87	8 (9%)	22 (24%)	**43 (48%)**	17 (19%)	0
Musculoskeletal	95	5 (5%)	21 (22%)	**51 (54%)**	18 (19%)	0
Vascular	187	3 (2%)	60 (32%)	**120 (64%)**	4 (2%)	0
Paediatric	141	9 (6%)	58 (41%)	**70 (50%)**	4 (3%)	0
Prostate	8	0	1 (12%)	**4 (50%)**	3 (38%)	0
Breast	7	0	1 (14%)	**3 (43%)**	3 (43%)	0

Almost 80% of obstetric sonographers stated they practised at advanced level. In view of the complexities of current screening pathways and recent third trimester growth initiatives, where it is the responsibility of the practitioner to ensure correct interpretation of findings and arrange onward management accordingly, the majority of obstetric ultrasound examinations align well with advanced clinical practice. Only one practitioner from a midwifery background performed interventional work related to obstetrics but had the job title 'extended role sonographer' and was paid at band 7.

Prostate and breast practitioners

The person practising at 'only' senior level when imaging prostate glands said they performed transrectal biopsies so arguably should have selected the highest level of practice in view of the complex and interventional nature of their work. In addition, they reported working at advanced level clinically in MSK, general and gynaecological although had no non-clinical roles related to advanced or consultant practice (e.g. no research or leadership roles) other than a single one-to-one teaching session per week. *(Respondent #12)*

The person performing breast ultrasound at senior level stated that their reports were checked and amended by another person. They did not explain why and did not appear to be in training. They identified themselves as working at advanced practice level in other clinical areas. *(Respondent #49)*

Details of consultant practice

Activities and procedures associated with consultant practice from the 42 respondents working at this level are provided in Table 4. Of these, many work in multiple clinical areas such as MSK and head and neck. It is of interest that no radiographers claim to work at consultant level clinically (i.e. complex caseload and/or interventional procedures) in obstetrics or EPU. This may have become more the domain of nurses and midwives although numbers are too small to generalise.

Table 4. Consultant level clinical practice in detail

Consultant level practice	Number out of 300	Professional background	Clinical duties offered
Early pregnancy	3	Nurse	Discuss medical and conservative management, provide medicines for treatment options, manage ectopics, take blood samples, perform vaginal speculum examinations
Obstetrics	1	Midwife	Assists with amniocenteses and CVS, performs HyCoSy
Gynae	8	7 Radiographer 1 Nurse	HyCoSy, biopsy, cyst and abscess drainage, take blood samples, handle hospital admissions
General abdominal and testes	10	Radiographer	CEUS, drains, biopsy, nephrostomy, joint injection
Head and neck	17	Radiographer	FNA, biopsy, cyst drainage and one does breast ultrasound
MSK and lumps	18	15 Radiographer 1 Physio 1 BSc Sonog 1 Podiatrist	MSK injection, biopsy, aspiration, foreign body marking, steroid injection, one stop clinic

Vascular	4	1 Vasc scientist 3 Radiographer	US guided angioplasty, CEUS, EVAR, sclerotherapy, VNUS closure guidance
Paediatric	4	Radiographer	FNA, biopsy, informs department of problems
Prostate	3	Radiographer	Biopsy, manage complications
Breast	3	Radiographer	Cyst aspiration, FNA, biopsy, stereotaxy, localisation, report mammograms

CVS = Chorionic villus sampling. HyCoSy = Hysterosalpino-contrast sonography. CEUS = Contrast enhanced ultrasound. EVAR = Endovascular aneurysm repair. VNUS = endovenous radiofrequency ablation. FNA = Fine needle aspiration

Non-clinical skills associated with higher levels of practice

3.5 Management and Leadership

The participants were asked about non-clinical duties related to advanced or consultant practice and the answers again showed wide variation. Regarding tasks associated with managerial and leadership roles, 42% (n = 127) said they found the equivalent of at least one session a week for this purpose. Participants had 11 activities to choose from as well as 'Other' so they had the opportunity to describe managerial and/or leadership duties not listed.

All who stated they have managerial or leadership responsibilities took part in roles associated with advanced practice such as audit, governance, and staff appraisals. The most common duties were vetting requests (94%), updating protocols (82%) and liaising with other in-house services and managers (71%). Many (45%) influenced service delivery at a local or regional level. Far fewer liaised with national organisations such as the National Institute for Health and Care Excellence, Public Health England and the Society of Radiographers (22%) and only 10% stated they influenced service delivery at a national level.

3.6 Education

Almost all who took part (n = 275, 92%) were involved with training and/or educating others in some form and 80% gave between one and three sessions a week to this duty. A total of 10 activities associated with training and education were listed for participants to select as well as an 'Other' option to capture duties not listed. The top activity selected by 98% was providing one to one clinical supervision. Around 66% completed progress reports and 60% conducted formative assessments. Just under half (49%) conducted summative assessments.

It is difficult to precisely define what roles in teaching and learning in ultrasound may qualify as advanced or consultant practice although tasks have been cross-referenced with statements from the ACP framework[4]. Other education-related activities listed were small group teaching (31%) and influencing training at a local level (30%). Large group teaching (11%) and influencing training at a national level (8%) could be associated with consultant practice and were activities performed by fewer participants. In addition, only 9% were involved with writing for publication, which of course may be done by any practitioner but is associated more often with experienced staff. There were nine 'Other' answers offered by respondents, which included acting as an accreditor for the Consortium for the Accreditation of Sonographic Education, acting as external examiners, and teaching at local universities.

3.7 Research

Audit and service evaluation are considered to be within the research domain of advanced practice by HEE[4]. Therefore, sonographer respondents who undertook audit were deemed to be 'research active' in our survey. Only 31% (n = 93) of all participants stated that they had a role in research or audit. If audit was excluded from the research element of advanced practice activity, this figure would drop to just 21%. All clinical areas had sonographers involved with research. These sonographers had a wide range of experience and used 19 different job titles between them.

Again, 10 research-related activities were offered as well as an 'Other' option. Data collection for another professional or profession was the most common research activity stated (56%) with audit second (33%). There was a much smaller cohort of respondents involved with the planning and analysis of research and far fewer were principal investigators (10%) or responsible for disseminating results at a national level (6%). Analysis of professional backgrounds indicate that vascular sonographers are more frequently research-active compared with radiographer sonographers.

Results in this section indicate that there is research activity occurring but, since it is usually in the form of data collection, the research may not be sonographer-led and is rarely disseminated by sonographers. Although figures are low across all professional backgrounds in this survey, there is potential for traditional radiographer sonographers to learn from the vascular cohort in terms of involvement with research design and results dissemination.

3.8 Individuals fulfilling all four pillars of advanced or consultant practice

Data were analysed to determine how many individuals, regardless of job title, were fulfilling all four pillars of advanced or consultant practice at once within their current role, as described by either the CPF or ACP framework. Of 300, 242 (81%) respondents were fulfilling the clinical and educational pillars of advanced or consultant practice but only 74 (25%) were fulfilling all four domains at once in that they had clinical, educational, leadership and management and research duties that all aligned with advanced or consultant level activities. Only 3 (1%) were practising fully at consultant level and the remaining 71 (24%) were advanced practitioner level. Therefore, 75% of respondents were practising below advanced levels and usually it was because of a lack of leadership and research responsibilities rather than any limitations in their clinical or educational roles.

3.9 Multidisciplinary team meeting attendance

Around 57% (n = 171) of all sonographers rarely or never attend MDT meetings, frequently citing that they are too busy or they perceive they are excluded and are waiting for an invitation from physicians. Contributing to MDTs is an excellent opportunity to learn and share information. It undoubtedly aligns with advanced practice, so attendance should be encouraged and facilitated.

3.10 Employment outside the NHS

Participants were asked if they had concurrent non-NHS employment/commitments and 86 of 300 (29%) said yes. Of these, 62 had just one role and 24 people had at least two separate jobs e.g., lecturer for a university and non-obstetric sonographer for an independent provider.

The most common employment outside the NHS was providing non-obstetric services for independent providers (n = 31 (10%)). Only 17 provided obstetric services for independent providers (6%). Lecturing for a university was reported by 28 people (9%).

Working for an agency that provided locum services for the NHS was a role held by 18 (6%). Smaller numbers stated that they did research (3%), expert witness reports and 'private practice' outside the NHS. Those who stated 'private practice' offered this in the free text 'Other' category so details are limited. The majority of respondents who had non-NHS roles indicated that variety and additional remuneration were common drivers.

3.11 Free text comments

Individuals were given the chance to add comments at the end of the survey if they felt they had information that had not been covered elsewhere. Of 300 respondents, 111 chose to leave a free text response. These were explored and 11 themes were identified (Table 5). However, many remarks covered multiple themes, as illustrated by these typical examples;

Lists are becoming unsafe. They are over booked. Our breaks are being taken away. Feel very under valued, there's no training or development and managers do not listen. We are also being snowed under by all the obstetric demands. (Respondent #61)

I used to love my job - now I am under lots of pressure from all angles and feel like I cannot do my role to the standard I would like. The demand for ultrasound is rocketing and we have no staff. I feel the NHS is on its knees. (Respondent #67)

Table 5. Themed free text comments from participants

Theme (number of comments related to this theme)	Quotation examples related to the theme # = respondent number
1. Lack of job satisfaction including; Lack of opportunities to progress Feelings of disparity in roles and pay bands Feeling underused and unrewarded (38 comments)	*I am dissatisfied with the flat career structure and lack of incentive to learn new roles and responsibilities as they are not rewarded.* #215 *It's unfair that someone scanning just abdomens all day with no other skills or responsibilities can be paid the same as someone doing obstetrics, paediatrics, testicular, neck, advanced msk and gynecology plus has skills in vascular and breast ultrasound, who also works as the acting department lead and teaches sonographers and radiologists.* #171 *Job satisfaction is low in the NHS. Not much opportunity to develop so I seek to stretch myself professionally and try new things outside the NHS instead. I've given up obstetric US too since the environment is so unpleasant.* #17 *I feel there is limited room for role expansion and no defined framework for career development.* #261
2. Increasing pressures on staff including; Increasing workload Stressful working conditions Staff shortages	*I feel my work is like being on an assembly line. 19/20 scans per day, not always getting breaks, full PPE. It is all about throughput/numbers as far as our management are concerned*. #4 *Workload is too high - no deputy, staff shortages*. #97 *The stress I'm under has passed from being an exciting constructive always learning kind of stress to a stress that merely comes from*

(28 comments)	*being overstretched by numbers of patients - not challenged but still overwhelmed. It's a horrible corrosive feeling.* #86 *Due to the increasing workload & pressures on ultrasound departments I'm not sure physically that I will be able to stay in this job role up to when I retire*. #298
3. Feeling unsupported and/or held back by managers (24 comments)	*The hospital treats staff appallingly. Blame culture, lazy managers, no support the list goes on*. #8 *Very stressful job with very little support at my trust. We are a small hospital that is part of a larger teaching hospital. There are no radiologists at my site and therefore no one to discuss cases with.* #175 *Current job satisfaction & engagement has never been so low, & I don't think the pandemic is to blame. It has just accelerated the process & flagged up concerns. None of which seems to be acknowledged or accepted by immediate or Trust management. The post pandemic period should be interesting.* #47 *It's becoming more awful by the day. The radiology manager has absolutely no idea of the issues in US, particularly obs & gynae.* #62
4. Feeling unsupported and/or held back by radiologists and other clinicians (5 comments)	*I like many of my colleagues feel we could do more to contribute to patient pathways. I feel the radiologists and management team do not see the benefits of role extension which leads to frustration. I believe we should encourage staff to work to the top of their licence, but to do this you need a group of supportive radiologists.* #18 *Role extension for sonographers is often blocked by clinicians.* #13 *Next steps for developing interventional practice for experienced team are being held back by reluctance from some Radiologist colleagues.* #178
5. Obstetric ultrasound-related problems including; Increased number of patients per day Increased tasks such as additional paperwork and extra Doppler checks at scan Increasing numbers of women with high BMIs Abuse from pregnant patients and/or their partners	*Depressing lack of interest, support and/or involvement from senior management in the obstetric ultrasound service, its staff and their ideas.* #55 *Sonographer profession is at a crisis, with national shortages, low moral and general feeling of being under valued. Public attitude to obstetric sonographers during the pandemic, has made sonographers consider giving up obstetric scanning. #100* *I really love my job in obstetric ultrasound but it is relentlessly busy. WRULDs are v common in our Department (with serious long term sickness) and the job is getting harder as more women have raised BMIs*. #265

(10 comments)	*Poor working conditions, limited opportunity for career progression due to staffing levels, heavy workload, lack of support from Society of Radiographers through pandemic, lack of respect from colleagues in maternity and unrealistic expectations from obstetric patients combined with a rising level of verbal and online abuse towards sonographers have led to me giving notice and I will be leaving the profession shortly.* #222
6. Extra responsibilities and duties viewed as positive including; Involvement with special interest groups Development of PGD, SoPs and protocols Working as advisors and/or expert witnesses (11 comments)	*My role gives me job satisfaction. In my clinical practice I give health education (lifestyle changes and smoke cessation). I attend and participate in the radiology department audit and education meetings. Through my clinical and academic practice I actively promote governance. I am a member of the guidelines/protocol group within the radiology department and at local and national NAAASP levels. I am a member of the local universities ultrasound in medical education working group. I am a member of two international editorial boards. I peer review for international journals. I provide expert practice and supervision to other band 7 sonographers [and] in conjunction with consultant radiologists, use CEUS.* #31 *Member of various ultrasound related committees & organisations, expert witness*. #55 *Supporting a vascular surgeon in the private sector.* #74 *There is an emerging workforce of clinician sonographers that work within MSK and deliver at point of care. US is a particularly rewarding clinical skill that enhances patient care. There are challenges around governance including mentorship and training. I have set up and chair a [regional] AHP point of care MSK US network to help clinicians navigate the governance challenges and fulfil a peer support and review function.* #102 *Audit and team meetings are organised which can be a good learning process to discuss with our colleagues. Sonographers are encouraged to take on specialist work which I think makes us one of the best ultrasound departments in the country, encouraged by a really excellent consultant sonographer. #256*
7. High levels of job satisfaction despite a difficult NHS environment (9 comments)	*I was lead sonographer/ultrasound manager until 2 years ago. This was a stressful role although very satisfying. I am now partially retired in a clinical role only with no management responsibilities. This is extremely enjoyable with great interaction with patients and a chance to excel in the role, improving the patient experience and providing a high-quality diagnostic examination.* #110 *Having worked in private and NHS practice, job satisfaction is far greater in the NHS, however has meant a significant drop in pay for a similar role. #13*

8. A desire to research but feel there are few opportunities to get involved (8 comments)	*Little time to get involved in research (which I would like to) as clinical work takes precedence, lists are full every day and there is no time.* #57 *I would like to be able to train in other areas of ultrasound, do more research and generally be involved in more things other than scanning. #206* *There is little opportunity for research unless you reach consultant level.* #216
9. Litigation (2 comments)	*Increased RSI, increased fear of litigation, increased patient numbers, increased levels of mandatory training, increased additional unpaid hours. Would not recommend as career path. #184* *The role could use more protection from a legal perspective and a stronger focus towards RSI and awareness of workplace injuries could be increased. #220*
10. Work-related upper limb disorders (5 comments)	*Workload is very high in Obstetrics and that is affecting staff with increasing stress, RSI injuries increasing & no breaks.* #174 *We perform routine uterine artery and MCA Dopplers. We have to do a lot of admin for each patient including pathway forms and referrals. There's a very high level of work related injury in our department.* #96
11. Exodus (9 comments)	*I've been stuck at the top of band 7 for fourteen years. I can go no further in the department I work in without a Masters which due to the length of time I've been qualified would involve resitting / attaining new PGDip modules. I'm thinking of leaving the NHS.* #86 *No job progression opportunities. Bullying by line manager. No overtime available due to restrictions from line manager. Under utilised skills. Poor job satisfaction. No opportunities. Will be leaving NHS.* #295 *…rising level of verbal and online abuse towards sonographers have led to me giving notice, I will be leaving the profession shortly.* #222 *I am disappointed that only very senior sonographers are given time for CPD, research and time to attend MDT meetings. I also teach Radiology SPRs but often find that my list is compromised, no time to teach effectively. No time to discuss interesting cases with Consultants or follow them up as I am expected to scan all the time with no flexibility in the list. I had time for all of the items listed above when I started as a sonographer and realise it improved my abilities as a sonographer. This does not happen to Band 8 sonographers. I am very disappointed with the current approach in my department and will be leaving soon.* #178

The comments received overwhelmingly indicated a dissatisfied workforce in an unpleasant working environment often feeling under stress from both managers and patients. At least nine indicated a desire to leave the NHS. Other respondents wanted development opportunities and, given the chance, many would like to engage with research but were unsure how to start or where to find the time. Surprisingly, only five mentioned work-related upper limb disorders as a significant problem in their working lives. Positive comments included high levels of job satisfaction due to the belief they were making a difference to patients, and high levels of job satisfaction were also associated with those involved in non-clinical activities such as roles on committees and special interest groups.

4. Summary and recommendations

Almost half the respondents to this survey are over 50 years old. If they are representative of the wider workforce, strategies must be implemented urgently to address the known current shortfall and potential imminent mass retirement of sonographers.

Many respondents feel disillusioned with the current NHS environment and wish to leave. If this materialises, such an exodus combined with natural retirement could result in a significant reduction in service provision as well as a loss of considerable knowledge, expertise and experience.

There is little or no standardisation of roles, responsibilities or job titles. This is likely the result of a gradual shift of duties over time driven by local service needs, individual champions, and managers' attempts to recruit and retain staff. This lack of standardisation has led to an inequitable environment which only serves to fuel further the dissatisfaction felt by many. New training strategies and the fairer CPF will be difficult to implement under these conditions yet are needed more than ever.

Nearly one third (31%) of respondents believed they had skills and knowledge which were underused. This may indicate frustration and possibly boredom within a significant portion of the workforce. Efforts need to be made to identify and utilise these resources to increase job satisfaction for the individual and provide a more effective, efficient service for patients.

Most NHS sonographers are practising clinically at advanced or consultant level. Furthermore, 81% are fulfilling the clinical and educational pillars of advanced or consultant practice. This achievement is to be celebrated, especially in today's demanding healthcare environment. It reveals a dedicated professional workforce committed to educating others and high levels of clinical care. However, only 25% are fulfilling all four pillars of advanced or consultant practice and this finding is mirrored by recent related studies.[5-8] Multiple barriers to higher level practice including time restraints, service demands and a lack of managerial interest or support are reported. Furthermore, there may not be a full understanding of what advanced and consultant practice comprises. Evidence also suggests that non-clinical advanced and consultant practice involving leadership and research activities may be undervalued by some managers.

Accessible activities for sonographers to pursue, which fulfil these pillars, could include MDT meeting attendance, conducting audit and service evaluation, and greater engagement with national organisations such as the British Medical Ultrasound Society, Society of Radiographers, Society for Vascular Technology of Great Britain and Ireland, and the Consortium for the Accreditation of Sonographic Education.

5. Limitations

It is not known how many sonographers work in the NHS[1] therefore it is not possible to determine the proportion of the workforce that 300 respondents represents, or how generalisable our findings are to the wider sonographer workforce. However, a broad cross-section of demographics was obtained for England. The survey could have remained open for longer than three weeks, during which more sonographers may have taken the opportunity to respond, particularly from the smaller UK nations, thus making results more valid. Future work could explore NHS sonographer practice specifically in Wales, Scotland and Northern Ireland.

Further research is also recommended to explore regional practice and opportunities for development. Research targeted specifically at ultrasound department managers is needed to identify fully the incentives and barriers to greater numbers of sonographers practising at the top of their licence. It may also be of value to explore the extent to which non-clinical roles are understood and how frequently they are performed within individuals' own time.

Sonographers ineligible for registration with one of the UK regulatory Councils are unable to fulfill criteria for advanced practice, as defined in the ACP framework. Our survey did not investigate how many respondents may be affected by this embargo but when the Public Voluntary Register of Sonographers, hosted by the Society and College of Radiographers, closed in February 2021, around 300 individuals were ineligible for regulation. Further research is needed to explore their practice and identify ways to retain and develop this group.

There is a lack of clarity as to what non-clinical duties may be deemed as senior, advanced or consultant level practice. Where possible, activities in this survey were aligned with descriptors within the CPF[3] and the ACP framework[4] but these references occasionally conflicted. For example, in the CPF, senior sonographers may teach junior staff, but the ACP framework recognises simply 'teaching individuals' as an element of advanced practice. Furthermore, the ACP framework includes audit as a research activity associated with advanced practice although other organisations view audit as distinctly separate from research. In these situations, we have chosen to match respondents with the higher level of practice.

Another limitation of the study is that exact definitions for some types of employment outside the NHS were not given. It is possible, therefore, that some participants may be unclear or have varying views about what constitutes agency work, private practice or working for an independent provider. For example, a sonographer may be employed by an agency to work at NHS sites, or employed by a healthcare company on their premises, or the sonographer may run their own business. Answers from this section may overlap but numbers are small and are unlikely to skew the overall picture.

Many of the free text comments received were negative, which may suggest a degree of volunteer selection bias. However, a number of career issues relating to this cohort, such as increasing demands on the obstetric ultrasound workforce and large numbers of sonographers at the top of *Agenda for Change* pay band 7 with few opportunities for development are already well known. The difficult winter of 2020/2021 due to COVID-19 pressures, which preceded the launch of the survey, may have exacerbated existing problems, therefore a further survey after a suitable time interval and period of relative normality may be warranted for comparison.

6. Strengths

The questionnaire was simple, quick and easy to do, as reflected by the 94% completion rate, thus yielding maximum information for analysis. Publicising the survey through the BMUS and SCoR websites and via BMUS partners ensured that it reached a wide population of individuals as demonstrated by the broad demographic of respondents, including age, background, qualifications and clinical areas.

The survey is original, comprehensive and, to our knowledge, the first of its kind. It likely captures a representative snapshot of current NHS sonographer practice within England, which was otherwise anecdotal. The results provide an evidenced start-point from which further research can continue. In addition, findings from this study may serve to inform ongoing work within HEE and CASE, currently exploring strategies to progress this essential cohort.

7. Conclusion

The majority of respondents were performing clinical scans at advanced or consultant level. Most were involved with teaching others but far fewer numbers were involved in non-clinical activities related to research and leadership and management, which are essential components of advanced and consultant level practice. Only 1% of respondents were fulfilling all four pillars of consultant practice and 24% were fulfilling all four pillars of advanced practice. More sonographers need to engage with activities including MDT attendance, audit and advisory roles with national organisations if they are to fulfill all four pillars of higher-level practice. Managers are encouraged to value and support such initiatives.

Frequent free text comments from participants suggested that many of the ultrasound workforce were dissatisfied with their role, felt stressed and overburdened, and perceived that there were few development opportunities available to them. Steps need to be taken to mitigate these issues if the current workforce is to be retained and developed. Furthermore, a career in ultrasound needs to be made fairer, more attractive and more structured before recruiting tomorrow's workforce.

8. Acknowledgements

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