Charting the practical dimensions of understaffing from a managerial perspective: the everyday shape of the UK's sonographer shortage

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Abstract

Introduction: Across the last two decades, ultrasound services in many healthcare sectors have become increasingly pressurised as a consequence of upsurging demand and difficulties in recruiting viable clinicians. Indeed by 2013, the UK government's Migration Advisory Committee had listed sonography as an official 'shortage specialty'. Comparatively little research has to date, however, explored the impacts of this situation upon the departments themselves, and the individuals working therein. The core purpose of this study is, thus, to lend qualitative depth to current understandings of the frontline situation in the UK's ultrasound units, many of which are understaffed, from the perspective of their managers.

Methods: Using a thematic analysis informed by a Straussian model of Grounded Theory, N=20 extended accounts provided by ultrasound department leads in public (n=18) and private (n=2) units were explored.

Results: Four global themes emerged from the analysis of which the first two (the broadly sociological matters) are described in this paper. Theme 1 addresses how a lack of staff in the broader ultrasound economy has created a troublesome migratory system in contemporary UK ultrasound. Theme 2 addresses how this economy works chiefly to the advantage of the most

junior and the most senior clinicians, often leaving mid-career professionals in the borderline impossible situation of having to concurrently occupy both junior and senior roles.

Conclusions: The findings ideally open up debate on some key practical contingencies of the UK's sonographer shortage, and reflect upon literature regarding the nuanced aspects of a shifting healthcare workplace constitution.

Keywords: ultrasound; social science; grounded theory; social psychology; qualitative analysis

Introduction

It is well established that there are many technical and practical benefits to using ultrasound above other related medical imaging modalities in a range of modern healthcare contexts.[1,2] As Edwards highlights,[3] the fact that ultrasound is '…inexpensive, safe, readily available, well tolerated and yields instant results' renders it, effectively, '…the diagnostic equivalent of an Aspirin'. These inherent qualities go some way towards explaining the recent sharp escalation in demand for sonographic investigations, and thus for specialist sonographers, in the UK and elsewhere.[4] Between 1995/96 and 2013/14, the number of yearly ultrasound procedures (both obstetric and non-obstetric) conducted within the National Health Service (NHS) rose from 4,031,292 to 9,972,418 in England alone.[5]

In order to fully contextualise this upward trend in demand for ultrasound procedures, it is important to reflect not only upon the technical usefulness of the modality, but also upon a series of significant socio-political and cultural shifts in the modern healthcare environment. Notwithstanding the impacts of increasingly stringent governmental target-setting around acceptable waiting times for any given sonographic procedure, more litigious behaviour by patients - within the UK and US in particular - has been widely reported to have expanded the exercise of "defensive medicine" among General Practitioners and other clinicians.[6] Such recurrent ordering of batteries of potentially unnecessary tests, so as to negate the possibility of legal action from both the authentically sick and the 'worried well' may further explain why many ultrasound services have become progressively more pressurised. Whatever these causes might be, however, the essential and objective facts-of-the-matter in the UK, the specific domain of this paper's findings, remain clear and stark. The Society and College of Radiographers (henceforth SCoR) reports that by 2014, 18.1% of UK ultrasound vacancies remained unfilled, a

substantial rise from the 10.9% reported in 2011, and the 10.1% reported in 2009.[7,8] Indeed by 2013, the UK government's Migration Advisory Committee had listed sonography as an official "shortage specialty".[9]

Given the above, this paper is the first of two[a] addressing a large set of qualitative data originally collected during a broader project[10] funded by Health Education England, North West area (HENW). Drawn from detailed verbal accounts of pertinent issues provided by UK ultrasound department leads working in both public and private healthcare, the data addressed describe specific problems in professional practice resulting from the current lack of qualified sonographers available to UK healthcare services. The focus of the second paper relates more extensively to the interpersonal and social psychological impacts of short-staffing upon managers themselves, and the corollary socio-behavioural changes they have observed in their staff. Emphasis here falls, however, upon the documented character of the broader professional economy in contemporary ultrasound itself. It is contended that the inductive order of investigation used, by building a picture of the everyday concerns directly relevant to a set of key actors, can firstly lend depth to our current understanding of the 'coal-face' situation in UK sonography and, secondly, help ground future deductive research in the real-world experience of management-level professionals themselves.

Ultrasound and explanatory orthodoxies

[a] The original project produced data of a quality and quantity that could not be reasonably captured within a single paper of this order without significant loss of nuance and fidelity.

A sustained examination of empirical literature addressing the current situation in clinical ultrasound indicates a strong orientation towards an 'explanatory orthodoxy' in relevant research.[11,12] In short, the primary topics of investigation are (a) the root causes of the sonographer shortage, (b) potential solutions to it, or (c) both of the above.[2,4,13-15] Significantly less literature has addressed the character of the central issue itself in any serious depth; i.e. the variable manners in which a general trend in ultrasound demonstrably manifests within the everyday contexts of ultrasound departments themselves. As David Silverman compellingly argues, the danger of this approach is that the phenomenon of interest itself 'escapes', and we find ourselves trying to explain and solve a healthcare problem that we do not yet understand in its full complexity.[16] The nominally 'hard' medical sciences seldom fall into this trap; accurately describing the range of ways in which a disease actually manifests, for example, needs to prefigure explanations of nosology and aetiology, and the resultant practice of direct medicine itself. In the business of social analysis around concrete healthcare practice, however, a more cavalier approach to the details of the core phenomenon often prevails in the rush to explain the *Why?* and the *What now?*[12]

The above is by no means designed to devalue extant work in the field described; thus far, productively actionable findings have emerged within this body of research, particularly around educational interventions.[2,14] It is the contention here, however, that these studies largely are borne of the straightforward proposition that there are simply 'not enough sonographers'. This is, of course, true at the global level in the UK and, therefore, all corollary solutions proposed will also likely have facility at a global level. For example, it is reported that as a consequence of the workload stresses associated with covering the shortfall, there has been a strong upsurge in British sonographers either reducing hours or leaving the profession

completely, thereby exacerbating the underlying problems.[7] Furthermore, among those who remain in clinical practice, incidences of reported chronic pain and active injury are also on the increase within a profession that was already synonymous with high rates of work-related musculoskeletal disorder (WRMSD).[13,17] Somewhat inevitably, these indicate that the natural stresses and strains on the body of an ultrasound professional are exacerbated by additional workload, in turn resulting in sonographers reducing hours or quitting their present jobs, or sonography altogether.

None of the studies above address in detail, however, the distributed ways in which the sonographer shortage in the UK might affect different healthcare actors/institutions in different working contexts. This particular matter is a key concern elucidated in instructive studies of the global healthcare economy,[18] in which it is recurrently documented how an overall dearth of qualified staff encourages a 'siphoning' of medical expertise from capitally poorer to richer countries, thereby reinforcing the international healthcare *status quo*. Relatedly, it is only sporadically described, in literature addressing the UK's allied health professions, how short-staffing might work to the advantage of some individuals and institutions, and the disadvantage of others.[19] In research regarding UK ultrasound itself, however, there has remained a broadly uncontested assumption that 'understaffing is understaffing', and investigation has proceeded from that position.[4,13] The work reported below, thus, is primarily tasked with unpacking this core issue.

Materials and methods

The investigative framework adopted herein was governed by the Straussian model of Grounded Theory (STG).[20] This approach was a direct consequence of the requirements of the funding body, whereby a productive model of actionable output was mandated within a tight timeframe. STG has a strong history in health research,[21-23] in terms of its capacity to build practice-facing accounts of local healthcare work, when the conditions of a classical Grounded Theory,[24] i.e. unlimited time and/or saturated sampling opportunity, are not necessarily available. Rather, the conditions of investigation in this study dictated that, while there could be a limited number of participants, every participant involved could contribute to their utmost.

Participants

An opportunity sample of 20 ultrasound department leads (female=18, male=2) was recruited across a number of public (n=18) and private (n=2) units in, predominantly, the North of England (consonant with the concerns of the funding body). The public units included both urban teaching hospitals, and more rurally-based district generals, representing a variety of socio-demographic zones.

Given the restrictions of time and finance available within a publicly-funded project, a wide variety of prospective participants were initially approached, of which the first 20 to volunteer were interviewed. Conditions of ethical approval delimit further and more specific detailing of regions, ages and experience within a tightly-knit professional community, unless made directly relevant by the participants themselves (see below).

Procedure

A semi-structured schedule was prepared, grounded in open topics for respondents to discuss, with key issues framed as points-of-departure, rather than direct questions, so as to engender free talk rather than simple guided answers.[23] Issues pertinent to the analysis below were elicited through a single simple request: "Do you have any comments on the current nationwide shortage of sonographers, and how this may be affecting your own department?" Participants were encouraged to provide as much detail on the topic, and as many examples from concrete experience, as possible. The data presented below evidence the high degree to which they engaged with the issue. All interviews were conducted over a period of two months in 2015. These were handled exclusively by the first author, via telephone, to ensure consistency of collection, and were digitally recorded at source. Audio files were then transcribed verbatim, but direct quotations presented in this paper are subject to minor deletions/edits for clarity of reading wherever practically necessary.

Analysis

Provisional codes were developed from raw data by the first author (a practicing sonographer and academic); these were then reviewed and redeveloped by the second author (a veteran healthcare psychologist) and the third (a professional radiographer and seasoned academic researcher), and revised by all three until a mutually satisfactory grounded analysis of the full body of data was reached. These codes were then clustered by all three authors into a set of intermediate thematic groups, in line with the axial approach described by Corbin and Strauss.[20] From these, a set of local theoretical principles (higher-order themes), each fully descriptive of the issues apparent, were drawn.[23] The fourth author, an experienced sonographer/researcher unconnected to the original project, then reviewed the new interpretation of data from initial

codification to final structure. Given this input, all four authors then revised the total analysis independently and then collectively, thereby completing an extended process of triangular consensus validation.[25]

Trustworthiness

Above the criteria previously outlined, with respect to extended consensus validation, trustworthiness in analysis was further monitored in line with the standards of Yardley.[26] 'Transparency and coherence' were maintained through the business of, to authors best capacity, '…articulating and presenting the findings while being mindful of the grounding within the participants' lived experiences.' This is ideally evident below, in the manner of data presentation; systems of concepts are not represented without hard qualitative evidence in support of their veracity. Furthermore, and as an important 'credibility check',[27,28] a synopsis of the provisional analysis was returned to several of the original participants. All claimed formal recognition of the reported issues.

Ethics

All data, and data collection procedures, were addressed in strict accordance with the conditions of approval granted by the Ethics Panel at the authors' academic institution (ref: 15/30). As noted in the *Participants* section above, this has involved the withholding of some conventionally-available demographics to protect respondent identities. Furthermore, all transcripts were purged of specific details such as names, times and places, that may have retrospectively been used by a reader to isolate a particular individual, hospital or unit.

Results

Prior to formal investigation of the results, it should be noted that of the N=20 participants, n=18 reported sonographer shortages in their departments, while n=2 (one public, one private) did not. The data emerging from these latter (ostensibly "deviant") cases are not excluded from the analysis. Rather, and in line with the inductive investigative model adopted, their own observations are integrated where conditionally relevant. Given the above, the issues raised by participants grouped into four interlinking higher-order themes. These were:

1. Institutional inequalities and migration;
2. Individual inequalities and upward recruitment;
3. (Early) retirement and knowledge economy;
4. Uncertainty, insecurity and professional efficacy.

The first two of these themes are described below[b], with consistent reference to the participants' accounts of real-world practice.

1. Institutional inequalities and migration

A concern voiced by most participants related to how a more broadly understaffed national picture in ultrasound was not so much a problem in and of itself at the local level, so much as

[b] The latter two, as previously noted, are addressed in an allied paper.

how it encouraged rapid migration of qualified staff to other and (inferably better) jobs: *"[S]taff movement…it's a very real phenomenon at the moment."*

This migration was generally deemed to work in favour of private medicine (where wages are likely to be higher) and hospitals within which the ultrasound department was not *known* to be badly understaffed (i.e. where working conditions are likely to be better). Regarding the latter, it was a common assertion within the data collected that departments in rural areas were more likely to struggle to attract and keep staff than those in larger towns and cities, and such departments consequently experience a challenge regarding basic service-delivery:

> *"[We] do have problems making capacity and demand meet, because we just can't offer [staff] the same perks they'll get in [nearby town]."*
>
> *"[T]he full-time staff also work weekends and evenings to accommodate demand."*
>
> *"[W]e actually pulled [weekend cover] last year…because of the lack of staff in the core hours, we had to pull the staff back into the core hours of nine to five."*

A city-based participant, however, similarly acknowledged the contemporary difficulties in meeting demand:

> *"There's increased expectations…that it's not just a production line, sonography, you know. You want to give your quality of care there, but you always know that you're so much up against the wall that you fail, which is a shame really, it's like you're not giving [people] the service they deserve."*

In the most understaffed units, it was recurrently reported that locums and other medical imaging professionals had to be regularly employed at high mark-ups to fill the staffing shortfall, putting further strains on already tight budgets, and thus further reducing 'perks' (particularly training opportunities) for incumbent and prospective staff:

> *"[We] have radiologists performing out of hours lists to accommodate demand and they're paid at twenty two pounds per patient…which is starting to hurt a bit."*

> *"[W]e've had dealings with locum staff, we, well with locum agencies I should say. We approached a locum agency to try and recruit a locum to do some weekend work, but…for weekends, including VAT, you'd be looking at around ninety pounds per sonographer hour."*

The high expense of locum cover was even recognised by one of the private providers, who had actively acknowledged that her own unit was mostly untroubled by staff shortage:

> *"You know the locum rates…it does end up being a very expensive way to staff [a unit] so it would only be as contingency really."*

Ultimately, the key consequence of the UK's migratory economy in ultrasound was, given the above, recurrently claimed to be that the *known* 'Big Boys', and particularly those in private healthcare, get to stay big (via economic power and/or professional kudos) at the expense of the rest:

"[W]e do our best to try and retain our younger staff, but if you've got a department down the road offering alternative training opportunities, and alternative methods of role development then, then they will pinch staff."

"[They'll] go where it sounds best, because they can right now. Why wouldn't they?"

"There's a great threat [to us] from the independent care providers, because they pay more basically, the terms and conditions of contracts aren't the same as in the National Health Service."

2. Individual inequalities and upward recruitment

While potentially unhealthy for institutional healthcare delivery, it was widely acknowledged that the character of this short-staffed, migratory economy could be advantageous for individual sonographers themselves, offering up greater opportunities to move jobs and advance through the ranks. The reported experiences of the participants did not imply, on the other hand, that these benefits were available to all sonographers equally. A particularly common observation made by participants working in already short-staffed units was that new junior sonographers either did not arrive at all (simply opting for jobs in units they believed would offer lower workloads and/or better conditions), or simply gained short-term experience and left for the same greener pastures'.

"[I]t's very difficult to recruit. If we put an advert out we don't get any applicants that are any good, that have the right qualifications, the right experience…you can't recruit,

basically, for your vacancies. So it's a case of training your own [general radiographers] and hoping they stay."

"We're a District General, and then they either go to a tertiary centre or they go for something specialised like MSK."

Moreover, internal recruitment and training of new ultrasound staff from general radiography was rendered further problematic, in some cases, by further professional shortages in *those* departments.

"The biggest challenge that we have is actually getting staff released from their substantive posts to train [from radiography]. And that's because of the shortages on their side as well…they've got the issue of backfilling those posts."

"I think it's a big drain on the [radiography] pool that they can't sustain, keep having us take [staff] out of there."

"As a profession, [we're] struggling to recruit, really, aren't we? [And] we've struggled to get them released from the other departments to come in to train."

One participant further observed that some of the problems around acquirement of staff from the traditional recruitment-ground of general radiography, in an understaffed job market, were a consequence of the image of ultrasound itself as a career choice:

"[U]ltrasound's not been sexy…And for people trained in radiography, they've been seduced by cross-sectional imaging and MRI in particular, being the new trendy thing."

Although a lack of junior sonographers in their units was the primary concern voiced by many participants, some also noted a 'brain-drain' amongst the most senior professionals towards private and urban medicine. In these cases, the most experienced members of staff, who may have previously felt tied to a place by non-professional commitments, were often freed to move-on in same the way open to juniors once their own social circumstances changed; most commonly because their children had 'fled the nest'.

> *"The department has been below the fully staffed level for more than five years…each time we actually get one student who's qualified, one of the most experienced sonographers has left to another post in another hospital."*

At the individual level, thus, rather than simply benefitting all sonographers, the extant migratory economy in ultrasound was viewed to work most affirmatively for those with the fewest local ties. As such, a number of public units (and particularly those in rural areas) were reported to be staffed almost exclusively by a set of experienced professionals who had (a) physically settled in the area some years ago, but (b) might find social changes, such as uprooting a family, problematic. As one participant rather plaintively noted of her own workplace: *"The youngest of us is forty-nine."* These departments were then struggling to meet patient demand in a working environment where few new sonographers were arriving/staying to support them, and their most senior colleagues were also leaving in increasing numbers, thereby further escalating workload. Consequently, further loss of staff due to stress and physical injury was also reported to be on the rise, exacerbating the baseline problems.

"[We have staff] that can't work full-time because of injury. We acknowledge as a profession that [the situation now] is very strenuous…"

"[T]here are sonographers out there who still have a lot to give [but] can't actually physically work."

"The current staff, they're exhausted…There's rarely a week goes by when someone's not off with stress, which just stresses everyone else"

Discussion

A series of issues have emerged from the analysis above, the first and perhaps most obvious of which is that understaffing in contemporary UK ultrasound departments places a range of disproportionate economic strains on the budgets therein. While the cost of permanent staffing is clearly reduced, the expense of buying-in locums and other professionals to fill the gap on a sessional basis stretches the fiscal capacities of any public sonography unit.[29] In short, the use of limited funds to meet the imperatives of short-term service delivery could ultimately render the most short-staffed departments the most undesirable for new sonographers to join in ways beyond a simple inflation of workload.

Extensively emphasised in extant national and international healthcare literature, meanwhile, particularly that addressing the movement of physicians and nurses,[18,19] is how a fluid, migratory professional economy borne of an overall lack of qualified staff reproduces a broad set of structural inequalities. The present situation in contemporary UK ultrasound - as articulated by participants - mirrors this scenario, whereby a system of embedded and cyclical dominance increasingly prevails. In short, those units that are commonly understood have the

best conditions for employment and/or advancement (i.e. those with the best reputations) are those that then attract the best - and most - 'talent' at the expense of the remaining field.[30] As Erving Goffman famously noted, the widespread acceptance of a particular label (almost irrespective of its formal correspondence with reality) can engender a self-fulfilling prophecy, and self-sustaining momentum around it.[31] While widely accepted as useful in the dog-eat-dog world of business, this model of dominance can produce difficult and potentially damaging consequences within a nominally universal healthcare apparatus.[32] Not least among these problems is the documented need in ultrasound to procure new sonographers from a pool of internal and/or external radiographers. When said radiographers, themselves working in a similarly understaffed profession, now have the easy choice of moving to perceptually "sexier" fields such as CT and MRI, then both general radiography and - by extension - ultrasound can ultimately suffer. This system of upward recruitment, and the current problems inherent therein, finds no direct contemporary analogue elsewhere in allied healthcare literature. While, for example, the specific fields of mental health and palliative care nursing do often recruit from the general hospital nursing workforce, they are now often graduate professions in and of themselves.[33,34] At the time of writing, however, undergraduate access to ultrasound courses in the UK remains limited; as such, the relationship with general radiography remains embedded and problematic, and will likely continue to do so as long as both professions are short-staffed, and/or a new solution in ultrasound is found outside of the postgraduate domain.[2,10]

At the individual level, this migratory concern was further viewed by participants to enable the least and most experienced to move with freedom, not necessarily on account of qualifications or expertise in and of themselves, but more commonly as a consequence of the sonographers' own social circumstances.[19] It was generally viewed that the sonographers most

socially-anchored within an area (usually through family) were at the greatest disadvantage. As such, the current data emphasised a 'squeezed middle' in some workplaces, whereby the workloads of mid-career sonographers were progressively increased as their most experienced colleagues either moved-on or retired early, and junior sonographers were in desperately short supply. In short, the business of doing ultrasound, training new sonographers and being the responsible senior clinicians sometimes fell entirely on the same shoulders. It was this order of professional that was reported to be particularly vulnerable to psychological stress and physical injury,[13,17] and subject to extended absences or outright career-terminations (thereby exacerbating the stresses on the remainder, and the department itself).[7]

Conclusions

As is consistent with any qualitative study of this order, it should not be imagined that the issues described herein encompass all of the issues relevant to the matter at hand, nor that the issues articulated here will apply in all cases. The matters reported throughout this paper are, of course, drawn from accounts provided by a particular group of invested actors; unit managers in a particular set of socio-demographic domains. Although located in, broadly, the North of England, participants' positions reflected concerns endemic to both public and private, and urban and rural ultrasound. Nevertheless, while said positions were partial, these managers were in an optimal position to observe the core issues documented.

Critically, what has been illustrated herein is that a number of the macroscopic, sociological matters pertinent to both national and international healthcare workforce economies find an expression at the more local level of the UK's own ultrasound staffing conditions. Future

research emergent of these findings might then be predicated on how short-staffing in the ultrasound domain is not a simple, self-identical phenomenon. Rather, investigation should be founded on the assumption that there may be a set of complex socio-cultural issues in play in any given circumstance. Perhaps more actionably, however, and regarding this picture, we now (ideally) can think around sonography recruitment issues in Goffmanian terms,[31] whereby the attraction of the profession *at large* is increasingly a property of its perceived 'sexiness'. Should ultrasound not offer the instant appeal of its competitors, in a given migratory economy, then it will maintain its present recruitment problems in a what may ultimately become a damaging self-fulfilling prophecy.

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