

Barriers to research progress for perioperative care practitioners working in cardiothoracic surgery

Abstract

Policy and research literature worldwide support the need to build research capacity and capability among non-medical practitioners within healthcare systems. However, there exists a paucity of evidence on whether practitioners in cardiothoracic surgery are attuned to this and on what barriers or enablers exist. A survey was carried out with non-medical practitioners working in cardiothoracic surgery in the United Kingdom to explore attitudes towards health research and audit, and to identify current challenges and barriers to surgical research and audit as perceived by cardiothoracic nurses and allied health professionals. A total of 160 completed questionnaires were returned. 99% of respondents supported the need for research and believed that evidence-based surgical care improves outcomes for patients. 72% reported that their employer motivates them to take part in national research or audit but only 22% were allocated time to do so within their role; 96% reported their interest in being involved in research and audit, yet only 30% believed they had the skills to undertake research. 96% reported needing additional training. More work is needed to increase awareness, capacity and capability among cardiothoracic surgery care practitioners, and indeed other specialities to achieve research progress.

Keywords

Clinical audit, Evidence-based practice, Health education, Nurses, Operating Department Practitioners, Research - mixed methods.

Introduction

In the recent decades, international policy and research literature support the need to build research capability within healthcare systems (Cooke et al 2018). There is substantial agreement that this is essential to bridge gaps between evidence and practice, to solve problems and to generate resilience within systems, whilst promoting healthier populations (Cooke et al 2018, National Institute for Health and Care Research (NIHR) 2022).

The dual challenge is to both understand research capability development (Cooke et al 2018) alongside increasing human and physical resources for health research (Lansang & Dennis 2004). The World Health Organisation (WHO) and the Council on Health Research and Development (COHRED) significantly invest in promoting research capability in healthcare services (Pang et al 2003).

In the UK, the NIHR Academy develops and coordinates clinical academic training, career development and research capacity development for the NHS (Evans 2006, NIHR 2022). Both the NHS Long Term Plan (NHS 2019) and NHS 2022/23 priorities underline the need to fuel research as a means to improve the health of the population and secure sustainable recovery from the COVID-19 pandemic (NHS 2022).

The global and national enterprise for high-quality research is long-recognised in surgery (Horton 1996) and cardiothoracic surgery in particular regularly establishes research priorities based on unmet needs with a drive to improve surgical services (Lai et al 2020). However, participation from the varied disciplinary groups involved in surgical care of the cardiothoracic patient has been limited to date (Ski & Thompson 2011). The Cardio-Thoracic Interdisciplinary Research Network, a collaborative research group of healthcare professionals in cardiothoracic surgery sharing an interest in research (CIRN 2022) has been established to address this problem. Through the Associate Principal Investigator (aPI) scheme, the network provides opportunities to medical trainees, nurses or Allied Health Professionals (AHPs) to work alongside a principal investigator (often a senior surgeon) to deliver a clinical trial at their host organisation. Such national and international initiatives have led to a top-down stimulus through increased research funding or through individual education and support for professionals conducting clinical and quality improvement studies.

However, the 'paradigm shift' to nurses and AHP's participating in significant numbers in cardiothoracic research is nascent (Ski et al 2011). There is a paucity of evidence on whether **cardiothoracic perioperative care practitioners working in surgery (nurses and AHPs)** are aware of and equipped for research and audit, whether they effectively undertake either, and on what barriers and enablers they encounter in efforts to address these activities. The success of expanding the body of research and the efforts in building research capability in NHS cardiothoracic surgery services depends on having a clearer picture of nurses' and AHPs' perceptions and challenges to clinical research. Here, we conducted a survey to map out awareness, concerns and needs for this under-researched and under-resourced group of clinical staff.

The overall aim was to assess the views, concerns and needs regarding research. Specific objectives were to:

- **Explore cardiothoracic nurses' and AHPs' attitudes towards health research and audit**
- **Identify current challenges/barriers towards surgical research and audit as perceived by cardiothoracic nurses and AHPs.**

Methods

Study setting:

A questionnaire was offered to 200 cardiothoracic nurses and AHP surgical staff attending the Society of Cardiothoracic Surgery annual meeting in May 2022 in Belfast. As the proportion of operating department practitioners (ODP) members in the society is small, their opinions were obtained from a further delivery of the questionnaire at the Manchester Foundation Trust and the Alexandra Hospital, in Manchester.

Design:

The questionnaire's closed questions (Figures 7 to 19) were designed to address the objectives of the study. Despite that several tools to measure research capability have been developed, a 'globally applicable comprehensive tools to provide comparable, standardised and consistent measurements of research competencies' has not been found (Bilardi et al 2021, p.1). Luckson and colleagues (2018) developed several themes from exploring the research culture of nurses and allied health professionals (AHPs) in the UK around barriers, enablers and motivators for research. The questions crafted for this exploratory survey were built on these overarching topics, and intended to gauge the

interest in research and the significance attached to research practice for participants, as well as their effective involvement in research to date.

Completing the questionnaire was voluntary and **the questionnaire** and the 'Participant Information' leaflet were offered at the registration desk of the conference's reception. By completing the survey, participants confirmed their consent. Ethical approval to conduct the survey was granted by The Edge Hill University Health Research Authority Board (reference ETH2122-0126). The questionnaire was applied in collaboration with The National Institute of Health Research Surgical Technology Incubator and the Society of Cardiothoracic Surgery Committee.

Results

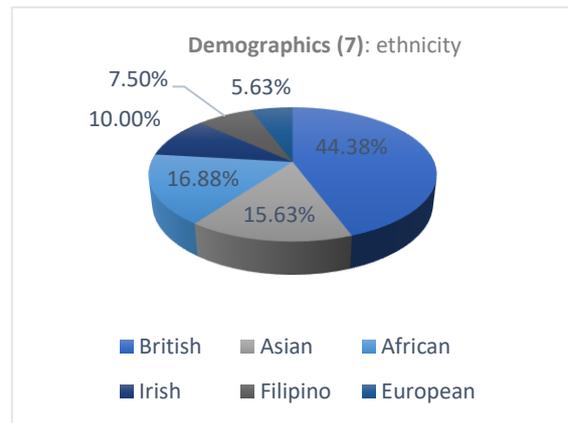
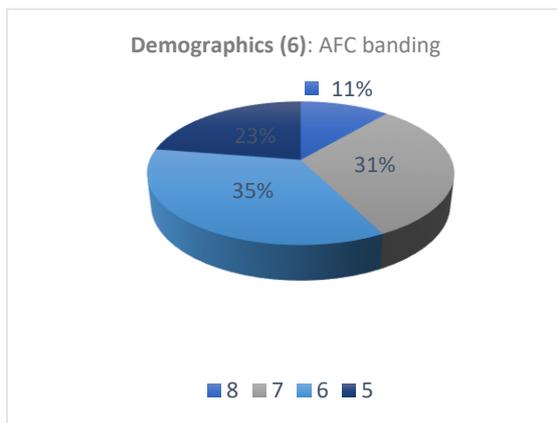
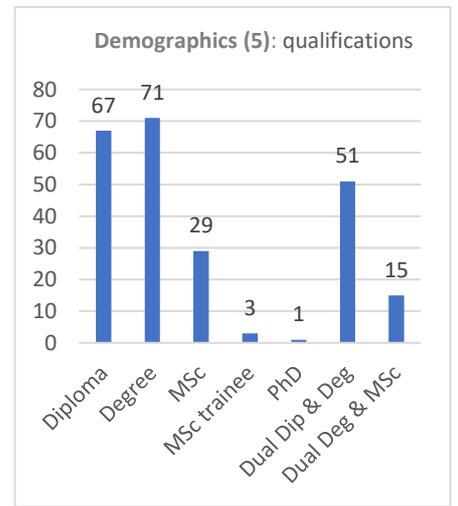
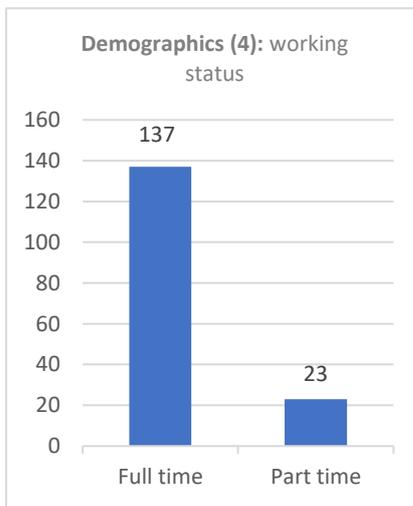
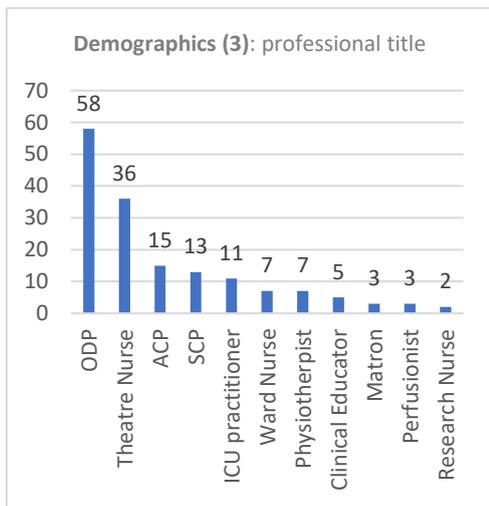
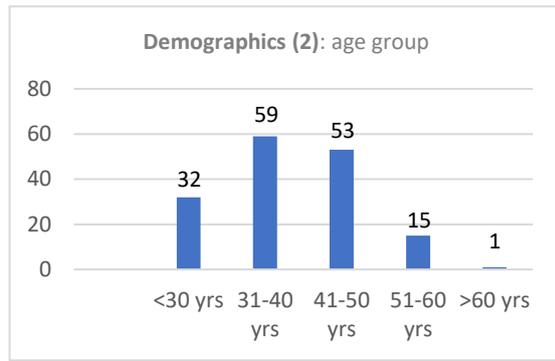
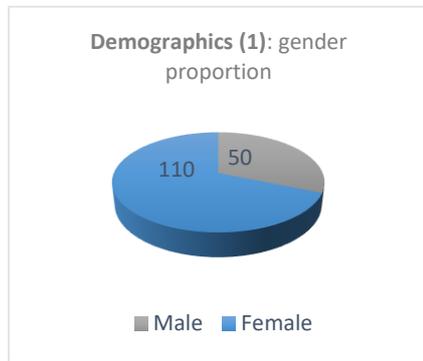
A total of 160 completed questionnaires (80%) were returned. Responses came from a diverse group of delegates at the national conference of the Society of Cardiothoracic Surgery, as well as from a more uniform group of ODPs working in Manchester's local units (Figures 1-6).

Most respondents were Operating Department Practitioners (ODPs) (36%), closely followed by theatre nurses (22%), while those in advanced roles (Advanced Clinical Practitioner and Surgical Care Practitioner) made up 9% and 8% of respondents, respectively. A similar proportion of participants were intensive care practitioners (7%) and the remaining 27% of respondents were homogeneously distributed through the roles of ward nurses, physiotherapists, matrons, perfusionists and research nurses. It is clear that some respondents identified themselves as in two or more roles (for example ODP and SCP) since single selection was not enforced.

There was a significant non-white ethnicity percentage of the participating group at 45.6%, higher than the average employed at NHS at the end of March 2020 of 22.1% (GOV.UK 2022), as well as a relatively high percentage of staff employed as band 7 or higher (42%).

Participant population demographics (Figures 1 to 6) were self-reported: gender (1), age (2), profession (3), working status (4), qualifications (5), agenda for change (AFC) banding (NHSEmployers 2022) (6) and ethnicity/nationality (7).

Figures 1 to 6: Self-reported participant population demographics, on gender proportion (1), age groups (2), professional titles (3), working status (4), qualifications (5), employment grade agenda for change (AFC) banding (6) and ethnicity/nationality (7).



Figures 7 to 19: Participant's (n=160) responses to questionnaire.

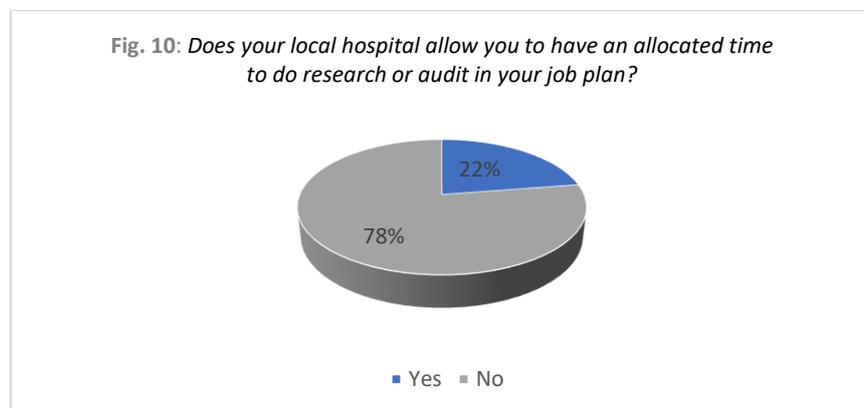
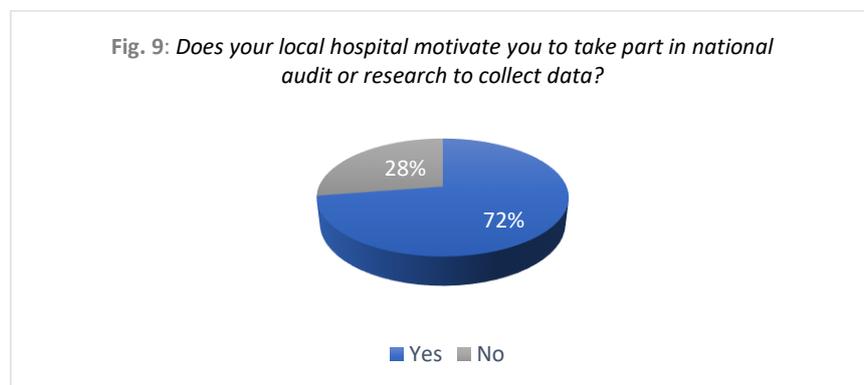
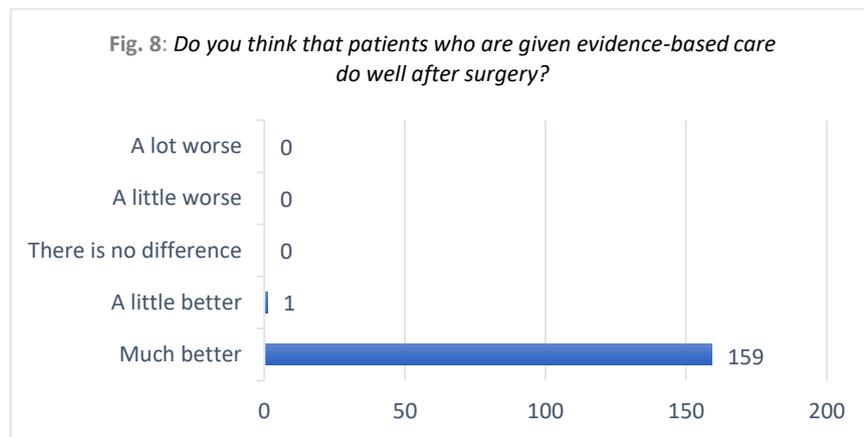
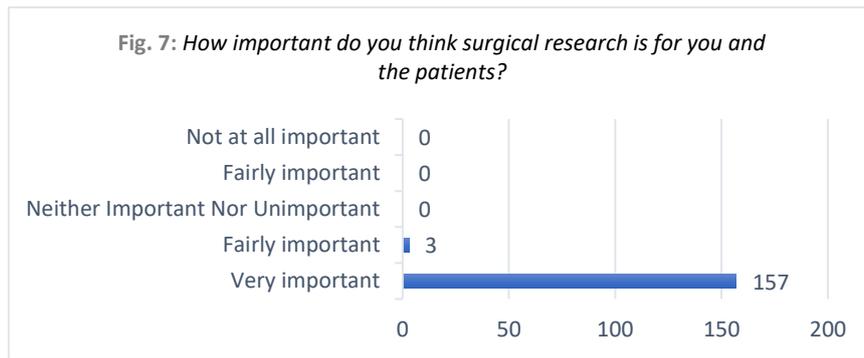


Fig. 11: Are you interested in carrying out surgical research and audit for staff and patient benefit?

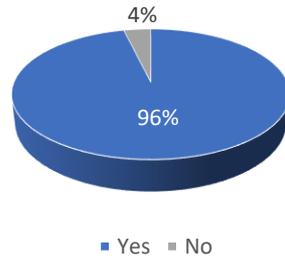


Fig. 12: Do you have enough knowledge to carry out clinical research?

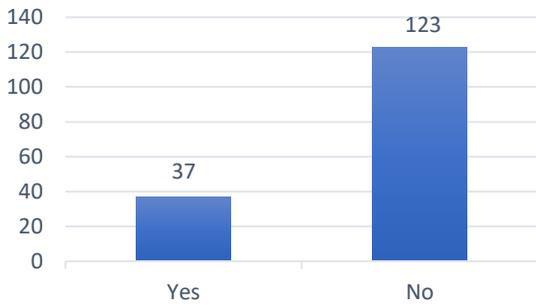


Fig. 13: Do you have enough knowledge to carry out clinical audit?

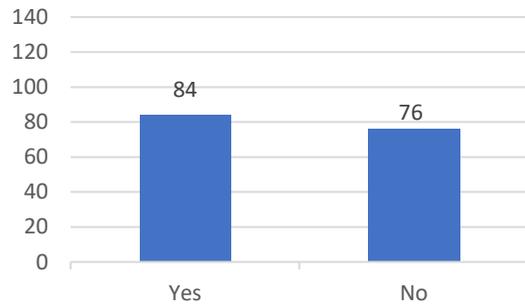


Fig. 14: Do you have enough support from your manager to carry out research and audit in your department?

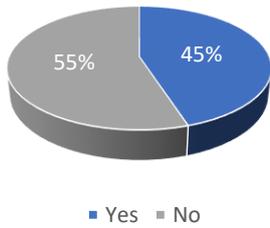


Fig. 15: Do you lack research supervision in your team?

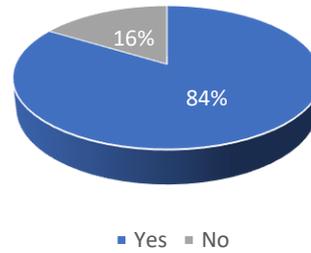


Fig. 16: Do you think that all hospitals should give their staff research and audit training as part of your career development?

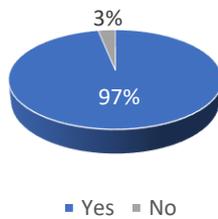


Fig. 17: Are you allowed to do research or audit if you want to do it on your own time?

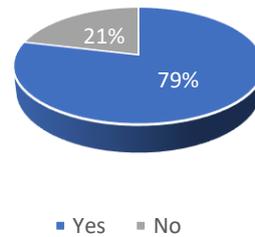


Fig. 18: Are you interested in being a principal investigator and conduct your own research/audit rather than collecting data for others?

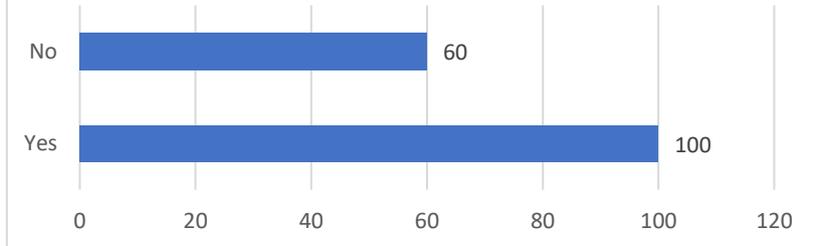


Fig 19: Additional comments?



DISCUSSION

This convenience sampling was also purposive. The potential bias introduced in seeking the opinions of professionals attending the national speciality meeting is acknowledged, whereupon it could be argued that participants are *a priori* more attuned to research and research practice. However, the sampling was also purposive because of the anticipated wide range of perspectives, and because of the need to obtain informed opinions on the current challenges and barriers.

1. Mindset / motivation

To explore mindsets, respondents were asked about the importance of surgical research and evidence-based care in clinical practice. Participants considered these crucial, with research being seen as 'very important' to 98% respondents (Figure 7) and with the general opinion that patients who are offered evidence-based care do 'much better' after surgery, save for one participant who answered that patients do 'a little better' (Figure 8). Respondents placed a high value on research and integration of research results in practice. This domain's survey questions are prone to response bias, and specifically to 'acquiescence' bias, whereupon participants will corroborate what they expect to be the researcher's desired answer. Nevertheless, the results are consistent with our hypotheses and the empiric logic underpinning policies to increase research participation: that is, that healthcare practitioners place a high value in research (Pawson & Tilley 1997).

On motivation to be involved in research, participants scored highly. Figure 11 reveals that 96% of participants were interested, at the time of the survey, in carrying out research and audit for the benefit of staff and patients. 100 out of the 160 (62.5%) participants, stated they would be keen to conduct research as the principal investigator (Figure 18). This may be interpreted in the context of the perceived barriers (see below), but can also be seen as a statement of availability and willingness to assume non-principal research roles. This dual interpretation is possible due to the phrasing of the question 'Are you interested in being a principal investigator and conduct your own research/audit rather than collecting data for others?'. Purposively ambiguous, this question does allow participants to suggest that they wouldn't 'mind' a participation in research that is collaborative and, presumably, 'more junior'. Although the overall survey does not give a clearer perspective in this respect, it is notable that over half of the participants would be interested in leading investigations of their own.

NHS staff's perceptions of research are subject to funded substantial research, specifically through the 'Represent -Clinical Research Network' study initiated in 2021 by the University of Sheffield (RCN 2022). The results are widely anticipated and should reveal transferable lessons to the fields of surgical care and cardiothoracic surgery, explored herein.

2. Barriers and enablers

Most of these questions were closed and did not attempt to conceal the hypothesis being tested: that non-medical practitioners *are likely to* need more support and resources. As such, response bias is probably present here too. By asking differently phrased, overlapping questions, however, we hoped to identify 'extreme/outlier' responses. In other words, participants were led to see the survey as an opportunity to give granular detail on what may support or stop them from doing

research, as opposed to a brief (and therefore categorical) affirmation of dissatisfaction about current conditions.

2.1. Intrinsic factor – ‘knowledge’

Of the 160 participants, 37 (23%) thought they had enough knowledge to conduct research and 123 (77%) felt they did not. As for audit, the split was more balanced, with 84 (53%) participants confident that they had enough knowledge to carry out audits and 76 (47%) saying that they did not. These results are unsurprising, given the composition of the sample as, for example 48 participants (30%) were either undertaking or had already completed MSc level study, with one having a PhD. This too is likely to represent a source of selection bias, as attendees at a conference are more likely to be research-aware than the wider pool of practitioners. In addition, a small portion of the sample were clinical educators (5) or research nurses (2). The additional comments (Figure 19) corroborate this, as 42% of the population stated that they had ‘done research as part of MSc’.

Crucially, however, 66% declared they had never done any research but nearly all (96%) stated they needed ‘additional training’. This indicates that even those nurses and AHPs who studied at MSc level self-perceived a gap in skills/knowledge for undertaking research. A possible reason for this may be that MSc learning has not consolidated, or even scaled down over time, given that 42% say that they have had no time to conduct any research since studying, while 89% stated that any time they may dedicate to research/audit would have to be outside of ‘normal working hours’ (Figure 19). This general need for more training appears clear in that 97% of participants thought that ‘all hospitals should give their staff research and audit training as part of career development’ (Figure 16) whereas 78% feel they are only allowed to undertake mandatory training (78%).

These findings are confirmatory of previous research, indicating that even where a positive research culture is demonstrated across multidisciplinary hospital teams, nearly half of respondents state they did not receive formal research training (Hollis et al 2019). Others have argued that the distinction between individual and organizational capacity is fundamental, and that development of one of these two facets, without the other, is insufficient to increase engagement in research (Watson et al 2005). The following sections, on ‘extrinsic factors’ further illustrate this.

2.2. Extrinsic factors – ‘time & expectations’

We anticipated that ‘time’ would be a strong barrier/enabler, and so the question reported in Figure 10 targeted this: ‘Does your local hospital allow you to have allocated time to do research or audit in your job plan?’. Only 22% of participants responded ‘yes’, despite that 72% felt that their employer ‘motivated them’ to conduct research/audit. This is an obvious contrast, whereupon employers seem to ‘stimulate’ participation but do not offer protected time. This is supported by the fact that 79% of participants felt that their employer ‘allowed’ them to conduct research and audits, as long as practitioners did this outside of normal working hours (Figure 17). Interestingly, in their final additional comments, 70% of respondents said that research was not part of their job plan (or job description), 92% said that clinical commitments ‘come first’, and 98% perceived a conflict in patient care and research/audit (Figure 19).

2.3. Extrinsic factors – ‘support & priorities’

Support from NHS management was considered insufficient by 55% of respondents and 84% said they lacked research supervision capacity in their teams. This may reflect a general notion that everyone recognises the importance of research & audit but that everyone is ‘busy’. In fact, in their additional comments, 99% of nurses/AHPs mentioned ‘staff shortages’ and 22% added that there was a ‘lack of leadership’ (Figure 19). While these statements deserve further exploration, they suggest that participants feel that they are expected to discharge direct patient care and that all resources are directed towards this activity, to the detriment of their involvement in research/audit. Thus, the potential patient-care benefits that these activities generate is relegated. These opinions are re-enforced by media, politicians and governing bodies, for whom waiting times, staff distribution problems, shortages and surgical backlogs generate headlines and resultant priority organisational responses. From our survey, nurses and AHPs involved in cardiothoracic surgery feel particularly pessimistic about their involvement in research whilst these problems are articulated in this way by managers.

Conclusion

Clinical research is essential for sustained high quality care and for the development of more effective affordable treatments. This questionnaire study sampled and explored the views, beliefs and concerns of nurses and AHPs working in cardiothoracic surgery with respect to their involvement in research and audit. We sought to identify current challenges/barriers with a view to developing potential solutions.

Results indicated that respondents value research and audit highly, and are intrinsically motivated to contribute/participate to its endeavours, either as research collaborators or principal investigators. However, participants corroborated the idea that there are several internal and external barriers to their involvement in research, most notably with regards to their own knowledge (capacity) and the availability of support in the formats of training, allocated time, leadership and governance structures.

Crucially, respondents revealed primary concerns around the distribution of NHS human resources, i.e., of their own time and activities as NHS workers. Nearly all nurses and AHP’s surveyed felt that they did not have the time to be involved in research, and that their roles are expected to stick to direct patient care in order to sustain service delivery. While these results are perhaps to be expected, they contrast starkly with the present drive towards increased multi-disciplinary research capacity and capability within the NHS. **Of note, the recent first ever national survey exploring challenges, motivators, and confidence levels in research among the wider professional group of AHPs, also highlights ‘lack of prioritisation of research within everyday healthcare’ (Comer et al 2022, p11).**

A significant limitation of this survey is that it did not collect information on what research respondents had been involved with previously and whether they had been involved with disseminations (i.e., published) before. Additionally, the survey did not investigate what kind of training was seen as required, as for example theoretical, methodological or project management, recruitment or dissemination.

Despite some methodological weaknesses, for example in plausible response bias, this survey scoped attitudes to research and barriers to nurse/AHP participation and its results are broadly supported by wider literature and current informal opinion. There is a need for further rigorous mixed methods research to validate these findings, to explore the 'whys' and 'hows' of results and to extend to important secondary measures, such as equality and diversity. Such detailed understanding is critical if the barriers identified here are to be overcome system-wide and non-medical cardiothoracic staff are to participate fully and effectively in research that makes a difference to patients.

REFERENCES:

- Bilardi D, Rapa E, Bernays S, Lang T et al (2021) Measuring research capacity development in healthcare workers: a systematic review *BMJ Open* 2021;11:e046796
- Chantal F Ski, David R Thompson, *Cardiovascular Nursing Research: Challenges and Opportunities, European Journal of Cardiovascular Nursing*, Volume 10, Issue 1, 1 March 2011, Pages 1–2, <https://doi.org/10.1016/j.ejcnurse.2010.09.002>
- Comer C, Collings R, McCracken A, Payne C and Moore A (2022) Allied health professionals' perceptions of research in the United Kingdom national health service: a survey of research capacity and culture. *BMC Health Serv Res* 22, 1094. Available at: <https://scts.org/professionals/research/cirn.aspx>
- Cooke J, Gardois P and Booth P 2018 Uncovering the mechanisms of research capacity development in health and social care: a realist synthesis *Health Research Policy and Systems* 16:93
- Evans T 2006 Best research for best health: a new national health research strategy *Clin Med* 6 435-437
- Gov.co.uk 2022 *NHS workforce - Ethnicity facts and figures* - GOV.UK. Available at <https://www.ethnicity-facts-figures.service.gov.uk/workforce-and-business/workforce-diversity/nhs-workforce/latest>
- Horton R 1996 Surgical research or comic opera: Questions but few answers *Lancet* 347:984
Horton R 1996 Surgical research or comic opera: questions but a few answers *Lancet* 347 (9007)984-985
- Lai FY, Abbasciano RG and Tabberer B 2020 Steering Group of the James Lind Alliance Heart Surgery Priority Setting Partnership, et al Identifying research priorities in cardiac surgery: a report from the James Lind Alliance Priority Setting Partnership in adult heart surgery *BMJ Open* n 2020;10:e038001. doi: 10.1136/bmjopen-2020-038001
- Lansang MA and Dennis R 2004 Building capacity in health research in the developing world *Bulletin of the World Health Organization* 82(10) 754-770
NIHR 2022 *NIHR Academy*. Available at <https://www.nihr.ac.uk/explore-nihr/support/academy.htm>
- Luckson M, Duncan F, Rajai A, Haigh C (2018) 'Exploring the research culture of nurses and allied health professionals (AHPs) in a research-focused and a nonresearch-focused healthcare organisation in the UK' *Journal of Clinical Nursing* 27:e1462–e1476

National Institute for Health and Care Research (NIHR) 2022 *NIHR Academy*. Available at <https://www.nihr.ac.uk/explore-nihr/support/academy.htm>

NHS 2019 *The NHS Long Term Plan*. Available <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf>

NHS 2019 *The NHS Long Term Plan*. Available <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf>

NHS 2022 *2022/23 priorities and operational planning guidance*. Available at: <https://www.england.nhs.uk/publication/2022-23-priorities-and-operational-planning-guidance/>

NHS 2022 *2022/23 priorities and operational planning guidance*. Available at: <https://www.england.nhs.uk/publication/2022-23-priorities-and-operational-planning-guidance/>

NHSEmployers (2022) *Agenda for Change* Available: <https://www.nhsemployers.org/people/agenda-change>

Pang T, Sadana R, Hanney S, Bhutta Z, Hyder AA and Simon J 2003 Knowledge for better health — a conceptual framework and foundation for health research systems *Bulletin of the World Health Organization* 81 (11) 815-820

Pawson R and Tilley N (1997) *Realistic Evaluation* SAGE Publications Ltd

RCN (2022) *Represent-CRN study*. Available at: <https://www.rcn.org.uk/Professional-Development/research-and-innovation/Research-alliance-with-University-of-Sheffield>. Accessed 19.08.2022

Royal College of Nurses (2022) *Represent-CRN study*. Available at: <https://www.rcn.org.uk/Professional-Development/research-and-innovation/Research-alliance-with-University-of-Sheffield>. Accessed 19.08.2022

Ski C and Thompson D 2011 Cardiovascular Nursing Research: Challenges and Opportunities , *European Journal of Cardiovascular Nursing* 10(1) 1–2

Society for Cardiothoracic Surgery in Great Britain and Ireland (SCTS) 2022 *Cardiothoracic Interdisciplinary Research Network (CIRN)*. CIRN 2022 Available at: <https://scts.org/professionals/research/cirn.aspx>

Watson B, Clarke C, Swallow V, Forster S (2005) 'Exploratory factor analysis of the research and development culture index among qualified nurses' *Issues in Clinical Nursing* 14, 1042–1047

