

A training needs analysis of the research capability, skills and knowledge of UK respiratory nurses

Abstract

Aims and objectives

To assess research competence, knowledge, and skills in the UK respiratory nurse workforce.

Background

Embedding research at the heart of nursing practice is fundamental to promoting evidence-based health care. The COVID-19 pandemic has brought the skills and knowledge of respiratory nurses to the fore and has further highlighted the importance of their unique contribution to patient care and the organisation of services. However, there is currently a lack of parity to our colleagues in Medicine to conceive and deliver research; and the research capability of the respiratory nursing workforce has not been investigated.

Methods

We distributed a cross-sectional online survey using the validated 'Research Capacity and Culture Tool' via professional respiratory organisations between 1st Sept and 31st Oct 2020.

Results

Sixty-two nurses participated in the study. In general, nurses reported little research activity, low research skills and limited support at individual, team, and organisational level, although they were confident in reviewing literature. Consultant nurses and nursing academics reported higher research skill and more confidence in study design and delivery. Barriers to involvement in research included lack of skill and success in gaining ethical approval, lack of backfill and conflicting work priorities. Nurses also stated there was little access to funding sources for research. Overall, nurses were interested in developing and leading their own research ideas.

Conclusions

Our work demonstrates that most of the respiratory nurses in our study had low levels of research skills and activity. Accessible funding for nursing research as well as access to research support, networks, and education would enable nurses to collaborate and lead patient-centred research to improve care and outcomes for patients.

Relevance to clinical practice

NHS organisations should increase opportunities for nurses to lead and develop patient-orientated research questions to directly influence clinical outcomes through improving access to research funding, allowing for clinical backfill and support at team and organisational level.

Key words

Nursing research; respiratory nursing; research capacity; research capability; research barriers;

Key points from the Training Needs Analysis:

- The findings showed that less than half of the nurses considered themselves to be research active and the vast majority rated their skills and success in research as low.
- More than half of the nurses participating considered research embedded in their role would improve their job satisfaction.
- The study highlighted the lack of infrastructure, tailored education, and protected time for nurses to conduct research, in their field.
- Improving nurse education to focus on clinical research could improve access to research infrastructure and enable nurses to lead their own research in their field.

Introduction

Skill and capacity to conduct timely nursing research is important in health care improvement, and to enable safe and quality clinical care and treatments (May, 2021). Embedding research at the heart of nursing practice is fundamental to promoting evidence-based health care and inquiring nursing professionals. Recent national directives have called for the development of clinical research environments that empowers nurses to lead, participate in, and deliver research (May, 2021). However, opportunities and capacity to conceive and deliver research differs to our colleagues in Medicine (Olive et al. 2020).

The COVID-19 pandemic has brought the skills and knowledge of respiratory nurses, in particular, to the fore (Roberts et al., 2021), and has further highlighted the importance of respiratory nurses and their unique contribution to patient care and organisation of services (Carrick-Sen et al., 2015; Franks-Meeks, 2020). Respiratory nurses possess clinical skills that enable accurate respiratory diagnosis, treatment initiation, monitoring, support for self-management, rehabilitation, and provision of health-related patient education with worldwide recognition of their effectiveness in improving quality of care and patient outcomes (Arranz Alonso et al., 2020; Fletcher, 2006; Fletcher & Dahl, 2013; Jeppesen et al., 2012; Yorke, 2017).

Over the last 20 years, there has been a proliferation in the numbers of respiratory nurses undertaking advanced roles, both nationally and internationally (Prigmore, 2020; Yorke, 2017). In the United Kingdom (UK) however, respiratory nursing expertise and its value to patient care has been underreported in the literature. For example, respiratory nurses were overlooked in a recent specialist nurse review (RCN, 2014). A UK Delphi study, however, highlighted that the research capabilities of respiratory nurses is currently unknown (Kelly, 2018).

Aim

Therefore, in order to begin to understand the current research deficit in respiratory nursing, a training needs analysis of respiratory nurses' research capability, skills and knowledge was conducted.

Literature review

We undertook a literature review to explore existing evidence on the research capacity and capability of nurses. Many studies were identified investigating research activity, barriers, and enablers to undertaking research in nursing groups and in specific settings, although we were unable to identify any previous studies investigating these themes in respiratory nurses specifically.

Several studies found that nurses were motivated in being involved with research because of intrinsic factors, such as developing their career or addressing a clinical problem (Gill et al., 2019) (Siedlecki & Albert, 2017) (McMaster, 2013). However, poor leadership and infrastructure structure was frequently cited as a barrier to involvement despite a high level of awareness of the importance of research (Henshall et al., 2021) ((Glynn et al., 2009). A qualitative study involving 25 advanced nurse practitioners ((Gullick & West, 2016) suggested that a research culture among nurses needs to be developed over time to build confidence and improve research outputs, and patient outcomes. Crozier & Kite propose this could be achieved through a combination of clear leadership, partnership working and enhanced infrastructure to enable nurses who provide direct patient care to develop, implement and evaluate their own service improvement and research initiatives (Carrick-Sen et al., 2015; Crozier, 2011). Collaboration and mentorship between clinicians and researchers also have the potential to embed research into daily practice (Priest H, 2007) (Bäck-Pettersson et al., 2013).

Further studies suggest that barriers to research involvement included as conflicting priorities, lack of time, infrastructure, funding, and leadership (Atkinson, 2008; Siedlecki & Albert, 2017). McMaster et al. (2013) surveyed mental health nurses and concluded that limited access to research support, resources, and mentorship, were barriers to progression as independent researchers. Likewise, the research culture of nurses and allied healthcare professionals in research versus non-research focussed clinical areas was found to be no different between professional groups with a lack of middle management support, making research involvement challenging at team level. Glynn et al. (2009) reported similar findings in a primary care setting, with participants citing poor leadership and structure as barriers to involvement despite a high level of awareness of the importance of research. Research skills and expertise, although are individual skills, can

only be executed in a supportive clinical environment, providing time, research support and access to facilities (Olive et al., 2020, Sanders et al., 2020).

The literature suggests that the provision of targeted research education and training is also important, and a shift is required to allow nurses to experience the research process at both pre-registration and post-registration levels to instil research confidence (Loke et al., 2014; McCormack, 2019). Indeed, Traav et al. (2021) like many other authors, found that nurses with higher academic levels had increased research activity and utilisation which resulted in improved patient outcomes (Karlberg Traav et al., 2021). Although student exposure and continuing professional development is often vital to progress as a nurse researcher, nurses may have to move into academic roles and wrestle with the conflict of identity and purpose (Barrow & Xu, 2021) and linking the academic fields of study to clinically important research questions.

Methods

A cross-sectional online self-administered survey (via Microsoft forms) was distributed to respiratory nurses in the UK from 1st September to 31st October 2020. Participant information was included at the outset of the survey and consent implied with participation. Demographic data collected included gender, work role and area, professional qualifications, and professional education and data collection was structured according to the validated 'Research Capacity and Culture Tool' (RCC) devised by Holden et al (Holden et al., 2012). The RCC tool examines participants' perception of research skill and capacity at individual (14 items), team (19 items) and organisational levels (18 items). For each of these domains users can rate their personal or organisational success or skill on a Likert scale (1=no success/skill to 10=highest success/skill). We defined a mean of over 5.0 as indicating adequate level of self-reported skill/success. Further data was collected relating to research activities, and barriers and motivators to research involvement. All paediatric and adult respiratory nurses, working across the NHS and in the private sector were eligible to participate.

Ethical considerations

Participant information preceded the survey and consent was implied with completion. All survey data was stored in a password protected University of Southampton cloud-based database. SQUIRE-EDU (Standards for Quality Improvement Reporting Excellence in Education) (Ogrinc, 2019), was used as a guideline to report findings. Ethical approval was granted by the University of Southampton (ERGO II: 61084).

Data analysis

Summary measures (mean with standard deviation), as well as counts and percentages, were used to describe respondent characteristics and survey responses using the Statistical Package for Social Sciences, SPSS version 27 (IBM Corp, 2020). Free text answers were organised into themes via content analysis.

Results

The results section includes an overview of participants demographics and their present research activity. Then the perceived research skills at individual, team and organisational level nurses perceive they already possess are presented. Finally, the barriers and challenges to research involvement are reported.

Demographics

In total, 62 nurses participated in the study, the majority of whom were female (n=54, 87.1%)¹. Of the 62 participants, 6 (9.7%) were consultant respiratory nurses, 16 (25.8%) were primary care nurses working as either a practice nurse, respiratory nurse specialist or advanced nurse practitioner, 14 (22.6%) were community respiratory specialist nurses, whilst 17 (27.4%) secondary care specialist nurses worked in a hospital setting either as a clinical nurse specialist or in ward-based setting. The remaining participants were either respiratory research nurses (2, 3.2%), or working in academia as a Nurse Lecturer, Educator or Research Fellow (4, 6.5%). Three (4.8%) did not state their current work role. The majority (49, 67.7%) had professional qualifications at postgraduate level, whilst 5 (8.1%) and 12 (19.4%) were qualified at certificate and undergraduate level respectively. Just over a fifth (13, 21%) of participants stated they were actively studying.

Insert Table I. Participant Characteristics

Research involvement

Under half 43.5% (27) of participants stated they were currently research active whilst a third (33.9%) were involved with data collection processes and 29% (18) involved with writing research reports, presentations, and publications. Few participants had current involvement in writing research protocols (11, 17%), seeking ethical approval (12, 19.4%) and applying for research funding (12, 19.4%). Performing literature reviews (10, 16.1%) and analysing qualitative and quantitative data (10, 16.1%) were also reported to be an infrequent activity. Approximately a quarter of participants stated that they had co-authored a paper (16, 25.8%) and presented research findings (15, 24.2%) in the past 12 months, whilst only 4.8% (3) reported they had been successful in securing research funding in the same time period.

Provision at work to support research involvements

Very few participants stated that infrastructure to support research activity was available in the workplace. and only 11.2% (7) of participants had allocated time and training for research activities. Just 8% (5) of participants stated they had access to research software, whilst 9.6% (6) had access to research supervision.

Research capability and capacity at individual, team and organisational level

The data was combined to report the level of research skill and success at individual, team and organisational level. The mean scores for research success and skill were highest overall at organisational level, followed by the individual and then team level. The highest scores at organisation level were for 'promotes clinical practice based on evidence' (7.1, \pm 2.7) and was high for all the domains. The lowest was for 'has regular forums/bulletins to present research findings' 3.5 (\pm 3.0). At individual level, in general, nurses reported most skill in finding (7.3, \pm 1.6) and critically reviewing literature (6.6, \pm 1.7). In contrast, nurses reported least skill in securing research funding (2.9, \pm 2.4) and submitting to ethics (3.4, \pm 2.8). At team level, overall low research success and skill is reported for all domains except for planning that is guided by evidence (5.0, \pm 3.0). The figures below demonstrate the mean reported perceptions of skill across the three domains; individual, team and organisational.

INSERT Figures 1, 2 and 3 here

Personal barriers to involvement with research

We found that the biggest barrier cited to involvement in research was the pressure of their work role taking priority (47, 75.8%), followed by lack of time (46, 74.2%). Nearly half of participants (30, 48.4%) stated that there was a lack of suitable backfill and that research funds were inadequate (28, 45.2%). Lack of managerial support (23, 37.1%) was also reported to be a barrier in conducting research and lack of administrative support was a perceived barrier for nearly half of all participants (30, 48.4%). Some nurses likewise cited other practical barriers including lack of research equipment (13, 21%), research software (23, 37.1%) and internet/library access (4, 6.5%). Only one nurse reported no interest in research as a barrier to involvement. A large proportion of nurses stated that a lack of research skills (27, 43.5%) was a barrier to research involvement. Some participants were intimidated by research language (16, 25.8%) and a fear of getting it wrong (19, 30.6%). In addition, a desire for a work/life balance (18, 29.5%) and personal commitments (13, 21%) was also purported for some to be a barrier to involvement with research.

INSERT Figure 4. Here.

Reported motivators to involvement in research

Developing skills (44, 71%), increased job satisfaction (36, 58.1%) and addressing a problem (31, 50%) were reported as personal motivators to involvement in research for most nurses. Just under half of all participants reported that advancing their career (30, 48.4%), proving a hypothesis/theory (30, 48.4%) and increased credibility (29, 46.8%) was a motivator. Few participants stated that scholarships (11, 17.7%) and access to funding (9, 14.5%) was available, whilst 13 (21%) stated they were doing research as part of post-graduate studies and that mentors were available to supervise and links to universities (12, 19.4%) were motivators to involvement in research. Work aspects that promoted involvement with research included: research being part of their job description (14, 22.6%), dedicated time for research (19, 30.6%) and colleagues doing research (10, 16.1%).

INSERT Figure 5. Here

Discussion

Summary of findings

Our study found that, despite reporting an interest in it, most participants were not directly involved with research. Few had managed to secure research funding, had co-authored a paper and/or presented research findings, but were more confident in searching and critically reviewing the literature. Personal factors including lack of research skills, being intimidated by research language, fear of getting it wrong, and desire for work/life balance and personal commitments were also reported as barriers to research involvement.

The main motivators to involvement to research were developing skills, increased job satisfaction and addressing a clinical problem. Advancing their career, proving a hypothesis or theory and increased credibility were also cited as motivators, but very few nurses stated that scholarships and access to funding were available, although 13 (21%) were doing post graduate studies.

Aligned with similar work in the field, our study found that nurses were interested in becoming involved in research activities, but very few were actually research active (Gill et al., 2019) (McMaster, 2013). Those who were research active were in nurse academic roles or were research nurses, so research was core to their job description. In the nursing profession research is seldom incorporated into job description and clinical academic pathways are not as established as our medical colleagues (Henshall et al. 2020). It has been highlighted that there is a need for a strategic shift in the emphasis and importance of nursing research (Loke et al., 2014). This aligns to the Chief Nursing Officer for England's strategic plan for research to empower nurses and ensure research is fully embedded in practice and professional decision-making to support the nursing profession to adapt to the complexities of contemporary healthcare (CNO, 2021).

Creating a climate and culture to integrate research into individual job roles will facilitate nurses to lead, use, deliver and participate in research will be a key outcome for this strategy (Henshall et al. 2020).

Employing research skills and leading patient focused research and quality improvement initiatives should be at the forefront of nursing practice, enabling nurses to make a positive difference to the health and lives of people. However, respiratory nurses in our study were daunted by research language and clearly demonstrated a lack in confidence in their research abilities, applying for funding grants and seeking ethical approval. Other authors found similar results and propose that enhancing the research culture of the organisation over time will translate into increasing levels of confidence in nurses who want to be research active (Gullick & West, 2016). One of the priorities identified is the need to build confidence to understand research; and to translate research into our everyday clinical language and demystify it. This will enable individuals to see the utility of research, apply it and demonstrate how it can inform and enhance practice. (Priest H, 2007) (Bäck-Pettersson et al., 2013). Clear leadership in research, alongside expert collaborations and improved infrastructure is needed to provide opportunities for nurses to become skilled in research and embed research into daily practice (Crozier, 2011).

The provision of targeted research education and training is also important. Most of our study sample (67.7%) reported a postgraduate qualification with an additional 21% studying at the time of the survey. Research skills are a key postgraduate attribute, graduates need to demonstrate a comprehensive understanding of research or advanced scholarship together with a practical understanding of how research techniques and enquiry are used to create and interpret knowledge in the discipline (QAA, 2014). The confidence in applying research skills in our study sample seems to be at odds with their educational attainment and may be a consequence of a lack of emphasis on teaching of research skills in the nursing disciplines (Woods, 2005). Integration of research into the pre-registration nursing curricula will enable nurses from an early stage in their careers to understand the utility, application of research and recognise how this can influence practice (Loke et al., 2014; McCormack, 2019). Access to infrastructure and expert support in clinical areas is also important to address and build confidence in nurses' research skills, with specific national recommendations made to highlight the importance of research within nursing and developing the evidence base for practice (Willis, 2015).

There is a recognised dearth of nurse-led, patient centred respiratory research internationally, a situation amplified during the COVID-19 pandemic which exposed a scarce nurse-led evidence base to manage acute and severe respiratory patients. There is a clear need to strengthen the nursing leadership to promote

research skills learning, support, funding, and activity. Entrenching research into education and clinical practice will require an increase in research capacity across the workforce, integration of research into the curricula for all healthcare disciplines, support for funding, and the development of clinical academic career pathways (Baltruks, 2018; Smith et al., 2018).

Limitations and Strengths

Despite being widely advertised online by professional organisations and via personal networks, study recruitment was low. The reason for the low response rate could be that some nurses do not use social media for professional purposes or may not have been interested in participating due to a lack of interest in research. The survey was also conducted during the COVID-19 pandemic so there was competing work place pressures and other surveys circulating at the time which may have affected the response rate. Despite this, there was broad representation from across clinical areas, experience, and geographic location. The use of a validated tool to collect data also enhances validity and reliability.

Summary

This is, to the authors' knowledge, the first study to capture the level of research activity, skill, and support for respiratory nurses, highlighting key barriers and facilitators.

This report highlights the key barriers and challenges that respiratory nurses currently face in developing research ideas, ethical reviews, and specific nurse funding for research endeavours.

Building confidence in research skills through clear leadership, new networks, better education, and improved signposting to opportunities and funding, needs to be made more available so that interested respiratory nurses can engage in and lead patient-centred research to improve care and outcomes for patients. Structural barriers need to be addressed by organisations to support nurses to engage in and lead research.

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