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Research Article

Assessing the Confidence of Graduating Pre-Registration Nurses to Use and Embed Respiratory Clinical Skills in Practice: A Mixed Methods Analysis

Nicola J Roberts[1], Carol A Kelly[2], Katherine A Lippiett[3], Ruth E Barker[4] and Lindsay Welch[5]*

[1]*School of Health and Social Care, Edinburgh Napier University, United Kingdom*

[2]*Respiratory Research Centre, Edge Hill University, United Kingdom*

[3]*School of Health Sciences, University of Southampton, United Kingdom*

[4]*Health Innovation Wessex, Chilworth, Southampton, United Kingdom*

[5]*Department of Nursing Science, Faculty of Health and Social Sciences, Bournemouth University, United Kingdom*

***Corresponding Author:** Lindsay Welch, Associate Professor of Nursing Practice, Department of Nursing Science, Faculty of Health and Social Science, Bournemouth Gateway Building, Bournemouth University, St Pauls Lane, United Kingdom.

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Abstract

Background: The incidence of respiratory disease is increasing; all nurses will care for respiratory patients during their career. There is disparity in the teaching of pre-registration respiratory nursing education. In the UK, revised Nursing and Midwifery Council educational standards provided the opportunity to review provision of UK respiratory nursing education.

This study was conducted to assess and make educational recommendations on the teaching, learning and student nurses' confidence to apply respiratory nursing skills in clinical practice at the point of qualifying (registration).

Method: A cross-sectional survey design. The survey was distributed to final year pre-registration nursing students in the UK via social media over a 10-week period (summer 2021), with 152 student responses across 29 Universities. Where available on social media, nursing departments in UK universities were contacted by one of the authors [NJR] to aid dissemination.

Results: Less than half of the students felt completely/fairly confident about their knowledge and understanding of respiratory anatomy and physiology (46.1%), respiratory pathophysiology (32.2%). Line of argument synthesis constructed four themes, around student confidence, aligning the quantitative and qualitative data:

- Disparity in teaching methods, application, and position in the programme,
- Positive respiratory learning experiences in clinical practice,
- Insufficient time and narrow disease scope of respiratory education,
- Application of personal learning experiences of respiratory illness.

Conclusion: We report lower levels of student confidence in key respiratory knowledge and skills, with disparity in UK HEI teaching.

Keywords: *Respiratory Nursing; Pre-Registration Nursing; Education in Practice; Curriculum Design*

Highlights

- Standardisation of fundamental respiratory education for undergraduate nurses the UK, so that key elements of respiratory care taught and applied to clinical practice.
- HEI's could work with national and international bodies to ensure consensus on standards of education and curriculum addresses respiratory learning.
- HEI's and clinical practice educators could explore novel teaching methods in respiratory education, such as scenario, or problem-based learning so that it is grounded in practice and made relevant to the workplace.
- Specific respiratory placements in the acute sector the community need to be offered with specific respiratory learning outcomes to be achieved.

Introduction

Globally, people are living longer, and later into older age [1]. In 2019, chronic respiratory diseases accounted for 4.0 million deaths [2], the third leading cause of death globally [3], In the UK this burden is exacerbated by an increasingly aging population, with an associated increasing frequency of respiratory and non-respiratory -related long-term conditions [4,5]. In addition, healthcare utilisation related to respiratory disease is increasing, leading to respiratory disease being included as a clinical priority in the NHS Long Term Plan [6]. The impact of COVID-19 has compounded the impact of existing respiratory disease on people and health systems [7].

Given the incidence of respiratory disease, nurses are likely to care for patients with either chronic or acute respiratory disease at some stage in their nursing career. Therefore, the global nursing workforce needs to be equipped with the skills, knowledge, and expertise to provide safe and effective respiratory care to a range of people with respiratory disease. Nurse leadership and positive role models can be inspirational and promote areas of interest for newly qualified nursing professionals [8]. Scenario and clinical based learning, including problem solving activities can enhance learning and clinical competence in specific fields [9].

A study undertaken in the UK prior to the COVID pandemic identified that just under half of the current specialist respiratory nursing workforce are planning to retire or leave nursing in the next 10 years [10] and 50% of specialist respiratory nurses are eligible to retire by 2022 [11]. It could therefore be posited that sustainability and succession planning for a future workforce starts in the introduction and development of interest in the topic during nurse training and post qualification.

The new standards for pre-registration nursing programmes [12] have provided an opportunity to providers of pre-registration nursing programmes to update their curricula to reflect the changes in nursing practice. Our previous study examined how respiratory care was taught to nursing pre-registration students [13]. The findings from our study highlighted that many UK AEIs often do not include fundamental elements of respiratory skills and knowledge in their curriculum. This current study set out to explore the levels of confidence of final year pre-registration nursing students in their respiratory clinical skills and knowledge, with the premise that confidence in respiratory skills, will be an enabler for the future respiratory workforce.

Methods

Survey tool

An online survey was designed using RedCAP© incorporating a combination of open-ended free-text and Likert-scale responses. The design of the survey follows on from our previous study asking UK AEIs to report the respiratory content of their undergraduate nursing programmes. In this study we ask students to estimate the time spent on the same key respiratory topics of in-university teaching in the previous study. We also ask them to rate their level of confidence on each of the respiratory topics using Likert scales, and to describe their practice placement experience and exposure to key respiratory clinical skills.

A pragmatic convenience sample of 200 pre-registration nursing students, third- and fourth-year students from all nursing disciplines (and any other undergraduate pre-registration nursing students due to graduate in 2021) from any UK university was sought with a

representative geographical spread from across the UK. The online survey was distributed via social media, tagging UK nursing academics and universities over a 10-week period (summer 2021). Nursing departments in UK universities were contacted to aid dissemination.

Data analysis

Likert scale survey data was entered into SPSS (Version 25.0)© for analysis. Descriptive statistical analysis and univariate inferential testing (Mann-Whitney, Kruskal-Walis) were undertaken for the survey responses where appropriate.

Free text comments were analysed using thematic analysis [14], using constant targeted comparison to construct codes that would refute or confirm (line of argument) the quantitative analysis [15]. A framework was subsequently developed to map to the existing quantitative data categories to determine how and why confidence is experienced in graduating student nurses undergoing respiratory training.

Three researchers conducted the analysis, coding and mapping (NR, ER, LW) which was independently reviewed by a researcher with expertise in mixed methods (REB).

Ethical approval

The School of Health and Life Science committee at Glasgow Caledonian University (HLS/NCH/20/042) approved the study. Participant information was provided at the start of the survey and consent was assumed through return of a completed survey. All data collected were anonymised, with any identifiable information removed prior to analysis.

Results

152 students provided responses predominantly on BSc (hons) university courses (111/152, 73%). Most were from the adult field (129/152, 84.9%) (Table 1). Participants thought that respiratory care was either important (7.9%) or very important in nursing (92.1%).

Demographics (n = 152)	n (%)
University degree	
BSc	35 (23.0)
BSc (Hons)	111 (73.0)
BA (Hons)	5 (3.3)
BN (Hons)	1 (0.7)
Nursing speciality (n = 152)	
Child	10 (6.6)
Adult	129 (84.9)
Mental Health	12 (7.9)
Learning disabilities	1 (0.7)
UK region	
Scotland	35 (23.0)
Northern Ireland	17 (11.2)
Wales	3 (2.0)
England	97 (63.8)
- North East	2 (1.3)
- North West	34 (22.4)
- Yorkshire and the Humber	1 (0.7)
- West Midlands	3 (2.0)
- East Midlands	4 (2.6)
- South West	18 (11.8)
- South East	23 (15.1)
- East of England	5 (3.3)
- Greater London	7 (4.6)

Table 1: *Descriptive statistics of the cohort.*

Time dedicated to respiratory care teaching

Table 2 summarises the estimated time nursing participants perceived they had spent receiving teaching on respiratory care during their undergraduate pre-registration nursing programmes. Just under half of the participants (71/152, 46.7%) reported having four hours or more of respiratory anatomy and physiology, whilst 40.1% (61/152) reported approximately 1-3 hrs. Most reported having between one to three hours teaching on respiratory pathophysiology (58/152, 38.2%) whilst just over a third (54/152, 35.6%) reported 4 or more hours of respiratory pathophysiology teaching.

	Cannot recall Frequency n (%)	None/under 1 hr Frequency (%)	1-3 hrs Frequency (%)	4 hrs or more Frequency (%)
Respiratory anatomy and physiology	13 (8.6)	6 (3.9)	61 (40.1)	71 (46.7)
Respiratory pathophysiology	15 (9.9)	25 (16.4)	58 (38.2)	54 (35.6)
Respiratory Pharmacology	13 (8.6)	62 (40.8)	52 (34.2)	24 (15.8)
Local and national respiratory guidelines	14 (9.2)	80 (52.6)	33 (21.7)	25 (16.4)
Long term conditions (respiratory specific)	11 (7.2)	35 (23.0)	47 (30.9)	59 (38.8)
Respiratory health and prevention of respiratory disease	11 (7.2)	55 (36.2)	47 (30.9)	39 (25.7)
Info around pulmonary rehabilitation and other interventions such as smoking cessation, flu vaccination	13 (8.6)	75 (49.3)	34 (22.4)	30 (19.7)

Table 2: *Recall of respiratory clinical teaching.*

Roughly half of all nursing students reported receiving no teaching or less than an hour of teaching on local and national respiratory guidelines (80/152, 52.6%). Similar proportions reported the same for education on pulmonary rehabilitation and other interventions (e.g. smoking cessation, influenza vaccination) (75/152, 49.3%). Most participants received at least an hour teaching on respiratory specific long-term conditions (1-3hrs 47/152, 30.9% and 4hrs+ 59/152, 38.8%) and respiratory health and prevention of disease (1-3hrs 47/152, 30.9% and 4hrs+ 39/152, 25.7%).

Confidence in knowledge and understanding of key respiratory topics

Less than half of the surveyed nursing students felt completely or fairly confident about their knowledge and understanding of respiratory anatomy and physiology (70/152, 46.1%), respiratory pathophysiology (49/152, 32.2%), respiratory pharmacology (39/152, 25.7%), local and national respiratory guidelines (38/152, 24.8%), respiratory long-term conditions (70/152, 46.1%) and information around respiratory interventions (50/152, 32.9%).

Less than half of the participants were aware of what pulmonary rehabilitation was and when it would be appropriate for patients to attend (45.4%). Two thirds reported being aware of how to deliver brief smoking cessation advice (66.4%) and 55.9% reported being aware of the pros/cons of influenza vaccination.

Teaching of respiratory clinical skills

Participants reported time spent on being educated on a range of respiratory clinical skills. Table 3 shows the lists of respiratory skills that the students were asked to comment on, this includes some specialist skills that would not routinely be taught at pre-registration level. Key skills that would be expected for a newly qualified nurse are highlighted in capitals in table 3 as suggested by Prigmore., *et al*. [23]. Common skills like respiratory rate and pulse oximetry were reported to be taught in both the skills lab and on practice placement (Table 3). Significantly more students reported being taught these skills on practice placement compared to the skills labs (respiratory rate [144/152, 94.7% versus 107/152, 70.4%]; pulse oximetry [145/152, 95.4% versus 103/152, 67.8%] (all $p < 0.001$). Additionally, most students felt completely/confident about their understanding of and undertaking pulse oximetry (>95%) and measuring respiratory rate (> 95%) and undertaking this in the future.

	Completely/ fairly confident	Somewhat confident	Slightly confident/ not at all confident
Respiratory anatomy and physiology	70 (46.1)	36 (23.7)	46 (30.3)
Respiratory pathophysiology	49 (32.2)	45 (29.6)	58 (38.2)
Respiratory Pharmacology	39 (25.7)	25 (23.0)	78 (51.3)
Local and national respiratory guidelines	38 (24.8)	37 (24.3)	77 (50.7)
Long term conditions (respiratory specific)	70 (46.1)	37 (24.3)	45 (29.6)
Respiratory health and prevention of respiratory disease	64 (42.1)	42 (27.6)	46 (30.3)
Info around pulmonary rehabilitation and other interventions such as smoking cessation, flu vaccination	50 (32.9)	36 (23.7)	66 (43.4)

Table 3: *Confidence in knowledge and understanding.*

	Completely/ fairly confident	Somewhat confident	Slightly confident/ not at all confident
Pulse oximetry	146 (96.1)	3 (2.0)	3 (2.0)
Respiratory rate	145 (95.4)	5 (3.3)	2 (1.3)
Oxygen administration	112 (73.7)	16 (10.5)	24 (15.8)
Inhaler technique	90 (59.2)	23 (15.1)	40 (26.3)
Peak flow	79 (52.0)	19 (12.5)	54 (35.5)
Relief of breathlessness	78 (51.3)	17 (11.2)	57 (37.5)
Suctioning	73 (48.0)	24 (15.8)	55 (36.2)
Respiratory scoring tools/ outcome measures	66 (43.4)	23 (15.1)	63 (41.4)
Smoking cessation	65 (42.8)	30 (19.7)	57 (37.5)
Sputum assessment	65 (42.8)	23 (15.1)	64 (42.1)
Chest examination	63 (41.4)	23 (15.1)	66 (43.4)
Spirometry	54 (35.5)	30 (19.7)	68 (44.7)
Tracheostomy care	51 (33.6)	16 (10.5)	85 (55.9)
Chest drains	48 (31.6)	24 (15.8)	79 (52.0)
NIV	46 (30.3)	18 (11.8)	88 (34.8)
Blood gas analysis	42 (27.6)	29 (19.1)	81 (53.3)

Table 4: *Confidence in skills.*

Unsurprisingly, students reported lower levels of teaching on specialist skills such as NIV (23.0%), chest drains (21.1%), sputum assessment (23.7%), tracheostomy (26.3%) and spirometry (29.6%) in the skills laboratories compared to other respiratory clinical skills and this is generally reflected in their knowledge and understanding, and confidence to undertake these skills in the future. Fewer felt completely or fairly confident about their knowledge and understanding of essential respiratory clinical skills such as respiratory scoring tools/outcome measures (78/152, 51.3%) or smoking cessation (79/152, 52.0%).

Participants reported being slightly or not at all confident in NIV (88/152, 57.9%) and tracheostomy care (85/152, 55.9%), both of which are specialist skills. Students reported being more confident and understanding the respiratory clinical skills but were significantly less confident about undertaking these skills in the future (chest examination, blood gas analysis, smoking cessation, respiratory scoring tools, spirometry, $p < 0.05$).

Key respiratory skills such as smoking cessation, peak flow and inhaler technique were not reported to be commonly taught in the skills laboratory (smoking cessation 49/152 [32.2%], peak flow 56/152 [36.8%], inhaler technique 47/152 [30.9%]. These skills were also not as frequently taught in practice as compared to other skills (smoking cessation 76/152 [50%], peak flow 95/152 [62.5%], inhaler technique 90/152 [59.2%]. Just over 50% were fairly or completely confident about their knowledge and understanding of smoking cessation with only 43% completely or fairly confident about providing smoking cessation advice and support in the future. Similarly for peak flow less than 50% (73/152, 48.0%) were completely or confident with just over 50% (79/152, 51.2%) reporting being completely or confident to undertake peak flow with patients. Inhaler technique fared slightly better, with 42.8% (65/152) reporting being completely or confident in terms of their understanding and 59.2% feeling completely or fairly confident to undertake this in practice.

Four themes were derived from the data. Two themes confirmed the quantitative data. Two themes yielded a new phenomenon, not directly linked to the quantitative data. The themes were (Figure 1):

- Disparity in teaching methods, application, and position in the programme,
- Positive respiratory learning experiences in clinical practice,
- Insufficient time and narrow disease scope of respiratory education,
- Application of personal learning experiences of respiratory illness.

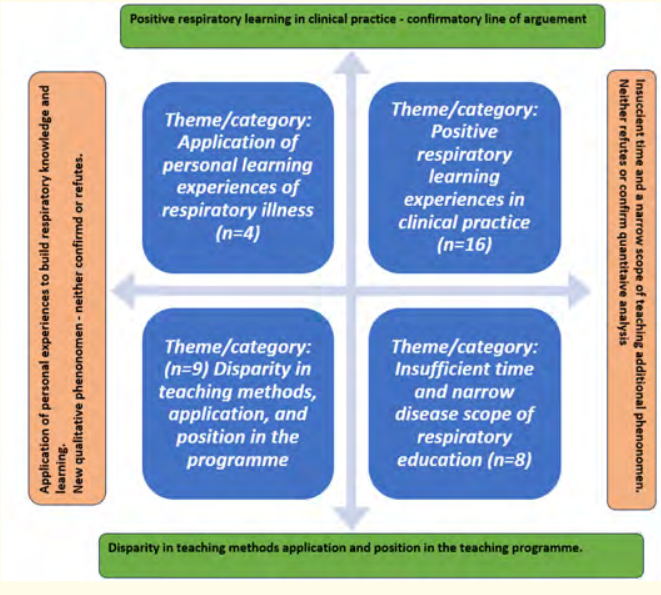

Figure 1: *Mixed methods themes.*

The disparity in teaching methods, application, and position in the programme (n = 9) line or argument confirmed the quantitative finding below in relation to the time dedicated to respiratory teaching, what was taught and when it was taught.

In the quantitative data, just under half of the participants (71/152, 46.7%) reported having four hours or more of respiratory anatomy and physiology, whilst 40.1% (61/152) had at least 1-3 hrs, 3.9% (6) had less than 1hr or no teaching. 8.6% (13/152) could not recall any teaching sessions.

One student reported: "I feel that some of the teaching was rushed and pushed into mini sessions at times or left for us to research with little guidance. I feel I learn better when taught or in practice so this is something that could be enhanced" (Participant 4).

Other students reported positive teaching experiences, "At the University teachers were very professional and have high skills'' (Participant 1).

This disparity in teaching and learning is reflected in the trend in the data in confidence levels (46.7%), so just under half, with a large amount of dedicated time and this is then reflected in the confidence levels.

The quantitative data reported that less than half of the students felt completely/fairly confident about their knowledge and understanding of respiratory anatomy and physiology (70/152, 46.1%).

The student comments here reflect the positive learning experience from clinical practice settings and these are in turn reflected in the quantitative data.

"I have learnt a lot from being with professionals out in the community on respiratory diseases, however overall not much was given at university" (Participant 5).

This is turn confirms the line of argument that statistically more teaching on respiratory topics in conducted in clinical practice as most students reported being taught significantly more clinical skills on placement compared to the clinical skills lab. Such as respiratory rate (144/152, 94.7% versus 107/152, 70.4%), pulse oximetry (145/152, 95.4% versus 103/152, 67.8%) as well as skills not as routinely taught such as blood gas analysis (88/152, 57.9% versus 41/152, 27.0%), and tracheostomy care (73/152, 48% versus 40/152, 26.3%) for example.

This category reflects a group of comments that support the line of argument that the overall quantitative statistics that students felt supported and adequately taught. Respiratory illness does appear to have been learned in clinical practice rather than taught in university, which notably is part of the split of nursing curriculum (2000 hours in theory and practice.) However, the comments suggest that the topic of respiratory was not revisited, taught in depth, nor was it broad -so other respiratory conditions other than COPD were not taught.

"Due to the nature of the course, we do not have much teaching in this field. We had basic classes in 1st year but there was not any other teaching of this topic, unless we had a placement on this type of ward" (Participant 9).

This aligns to the mix in the mixed quantitative results, which report significantly more students reported being taught these skills on practice placement compared to the skills labs (respiratory rate [144/152, 94.7% versus 107/152, 70.4%]; pulse oximetry [145/152, 95.4% versus 103/152, 67.8%] (all $p < 0.001$).

And continues to support the line of argument regarding the mix of clinical skills that were not reiterated in the skills lab. Also, the skills that were not taught in either location. Key respiratory skills such as smoking cessation, peak flow and inhaler technique were not reported to be commonly taught in the skills laboratory (smoking cessation 49/152 [32.2%], peak flow 56/152 [36.8%], inhaler

technique 47/152 [30.9%]. These skills were also not as frequently taught in practice as compared to other skills (smoking cessation 76/152 [50%], peak flow 95/152 [62.5%], inhaler technique 90/152 [59.2%].

The final mixed methods theme neither confirms nor refutes the line of argument from the quantitative data. It itself is a new phenomenon, that was not included in the survey or line of questioning. Several comments are linked to the use of personal experiences (having a respiratory illness or knowing someone close with a respiratory illness). The statements from participants draw on the experiences and teaching they have received in their personal lives.

"I feel that I have a lot of extra knowledge through being an asthmatic rather than learning it from university/placements. For example, I wasn't taught inhaler technique at university or placement, but I learned from my own asthma nurse and experience as a patient" (Participant 2).

This theme is positive in the sense that participants value the context of their learning and draw from other sources to enable them to build their work and understanding.

However, these are experiences that should be taught- or certainly part of experiences for student nurses to develop a rounded and evidenced based respiratory education.

Discussion

Nursing education programmes are designed to develop the knowledge, skills and attitudes required to be fit for clinical practice as a qualified professional nurse [8].

Gaps between theory and practice can be a significant contributor to stress when student nurses start in practice [16,17]. Linking clinical experiences, to classroom-based learning are key factors for nursing preparation as they provide nursing students with learning opportunities to consolidate the knowledge in real-life settings [18]. A review by Al Mekkawi and Khalil further highlighted that a lack of linked classroom and practise setting experiences affect graduates' readiness to practise in clinical settings. This theory-practise gap then leads to a confidence deficit and nurses have been shown to be significantly more likely to leave nursing after the first year of nursing registration, stating this as a factor. Nurse shortages are rife in healthcare systems in the United Kingdom and worldwide. It is important newly qualified nurses are supported to remain in nursing and to work in respiratory care to help minimise the impact of the ageing workforce [8].

Overall, there does not appear to be a significant amount of time dedicated to respiratory care in pre-registration curricula, particularly information about local and national guidelines and information around key preventative interventions such as influenza vaccination, pulmonary rehabilitation and smoking cessation. Less than half of the students who participated in the study felt completely or fairly confident about their knowledge and understanding of any of the respiratory care topics highlighted. This is not surprising our previous study, [13] highlighted that respiratory learning was often optional. This study highlighted a lack of consistent teaching and assessment of respiratory skills, respiratory health and prevention of respiratory disease was not a significant part of the curriculum in over half of the AEIs, despite featuring in health policy across the United Kingdom [19]. Students reported being taught respiratory clinical skills, both in practice and in the skills laboratory at AEIs, most commonly in their practice placements. This was reiterated by the line or argument themes include disparity in teaching methods, application of respiratory teaching and its position in the programme. Here respiratory could be part of a key learning outcome that spirals through the curriculum, gaining complexity and building in prior knowledge throughout. Spiral curriculums enable key concepts to be revisited and embedding in the nursing evidence base, building on complexity and promoting confidence [20].

This concept could also improve on the consideration that there is insufficient time and narrow disease scope of respiratory education. Spiralling and revisiting the topic in several different ways could improve knowledge and confidence. The concept of embedding evidence-based practice in undergraduate nursing curriculum was addressed by Scurlock-Evans., *et al*. 2017, described the impact on the curriculum and the learning [21]. They found that the timing of the teaching did have an impact of student perceptions of their own knowledge and how they can apply their knowledge to practice. This element is the fundamental element of nurse education to understand and apply know to clinical practice.

Furthermore, repetition in the classroom and in practice can improve recall. Recall of this teaching was higher for more common activities such as respiratory rate, pulse oximetry and oxygen administration. For most of the clinical skills, students were completely or fairly confident about their knowledge or understanding but they were significantly less likely to feel confident about undertaking these skills in the future, including behavioural change and assessment skills, such as respiratory scoring tools and smoking cessation. Positively, participants did report high levels of confidence in their knowledge and understanding of how to measure respiratory rate and use pulse oximetry and undertaking these skills in the future. This is important as measuring respiratory rate is acknowledged to be a core nursing skill, often under-reported or estimated instead of measured correctly [22].

Preparing students to be practice ready is the major focus of nursing education; this study has highlighted a gap in the levels of knowledge, understanding and confidence to undertake specific components of respiratory care. Patient safety may be at risk if nurses do not have adequate fundamental skills after registration, contributing to variation in the quality of care.

This study does have limitations; the results rely on an accurate recall from students on the amount of time spent learning about elements of respiratory education in their undergraduate degrees. The study had a relatively small sample size, although from a wide range of universities where the emphasis on respiratory teaching may differ depending on the skill and experience of the tutor. The survey was disseminated online, and this may have limited or encouraged a different population.

Conclusion

Fundamental respiratory skills need to be embedded and standardised worldwide in pre-registration curricula to ensure nurses are adequately trained on qualification to care for patients with respiratory presentations and conditions. The new standards for pre-registration nursing programmes in the UK [12] offers an opportunity to providers of pre-registration nursing programmes to flexibly design their own curricula and the autonomy to decide on the proportion of generic and field specific hours provided. Tutors and clinical practice mentors, who have different backgrounds and teaching methods also need to maintain their competence with respiratory clinical skills to facilitate effective teaching practice. New ways of delivering respiratory education could be explored to engage and enthuse students for example using more innovative simulation and skills training to reduce the reliance on practice to deliver teaching. This can be translated to national and international working groups (British Thoracic Society and the International Collaboration of Respiratory Nurses) to develop a global curriculum for respiratory nursing [24].

This study is the first to demonstrate that graduating nursing students may not have suitable knowledge, understanding and confidence to undertake respiratory clinical skills and respiratory care in practice. There needs to be agreed standards of respiratory education for undergraduate nurses in the UK such as those outlined by the British Thoracic Society, so that key elements of respiratory care are covered; this will ensure standards of care are upheld. Pre-registration nursing courses form the basis of a life-long career in nursing. Initial undergraduate training needs to build a foundation of respiratory core competence, so that nurses can develop these skills throughout their career.

Reporting Method

No Equator tool to fit the mixed methods design. Guided by the COREQ.

Patient or Public Contribution

No patient or public contribution.

Conflicts of Interest

No conflicts of interest have been stated by the authors.

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Author Contributions

Professor Nicola Roberts: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing-original draft, writing - review and editing.

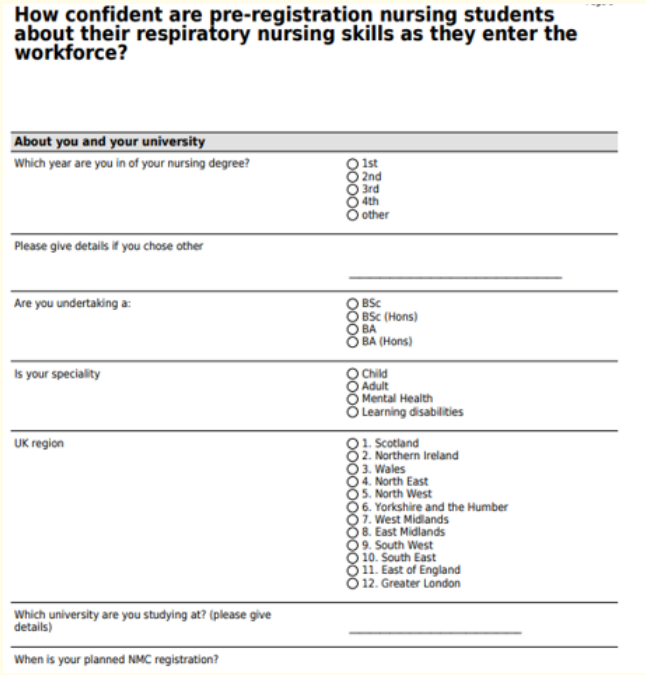
Dr Carol Kelly: Conceptualization, data curation, formal analysis.

Dr Katherine A Lippiett: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, supervision, writing - original draft, writing - review and editing.

Dr Ruth E Barker: Methodology, supervision, visualization, writing - review and editing.

Dr Lindsay Welch: Data curation, formal analysis, investigation, methodology, supervision, visualization, writing - original draft, writing - review and editing.

Appendix



How confident are pre-registration nursing students about their respiratory nursing skills as they enter the workforce?

About you and your university	
Which year are you in of your nursing degree?	○ 1st ○ 2nd ○ 3rd ○ 4th ○ other
Please give details if you chose other	_____
Are you undertaking a:	○ BSc ○ BSc (Hons) ○ BA ○ BA (Hons)
Is your speciality	○ Child ○ Adult ○ Mental Health ○ Learning disabilities
UK region	○ 1. Scotland ○ 2. Northern Ireland ○ 3. Wales ○ 4. North East ○ 5. North West ○ 6. Yorkshire and the Humber ○ 7. West Midlands ○ 8. East Midlands ○ 9. South West ○ 10. South East ○ 11. East of England ○ 12. Greater London
Which university are you studying at? (please give details)	_____
When is your planned NMC registration?	

In-university teaching

Reflecting back on your university course, how much time do you think you spent in class on the following

	None	under 1 hour	1-3 hours	4-6 hours	7 or more	Cannot recall
Respiratory anatomy and physiology	O	O	O	O	O	O
Respiratory pathophysiology	O	O	O	O	O	O
Respiratory Pharmacology	O	O	O	O	O	O
Local and national respiratory guidelines	O	O	O	O	O	O
Long term conditions (respiratory specific)	O	O	O	O	O	O
Respiratory health and prevention of respiratory disease	O	O	O	O	O	O
Info around pulmonary rehabilitation and other interventions such as smoking cessation, flu vaccination	O	O	O	O	O	O

How confident do you feel about your knowledge and understanding of the following areas

	completely confident	fairly confident	somewhat confident	slightly confident	not at all confident
Respiratory anatomy and physiology	O	O	O	O	O
Respiratory pathophysiology	O	O	O	O	O
Respiratory Pharmacology	O	O	O	O	O
Local and national respiratory guidelines	O	O	O	O	O
Long term conditions (respiratory specific)	O	O	O	O	O
Respiratory health and prevention of respiratory disease	O	O	O	O	O
Info around pulmonary rehabilitation and other interventions such as smoking cessation, flu vaccination	O	O	O	O	O

Are you aware of what pulmonary rehabilitation is and when it is appropriate for patients to attend?	O Yes O No
Are you aware of how to deliver brief smoking cessation advice?	O Yes O No
Are you aware of the pros / cons to flu vaccination in respiratory patients?	O Yes O No

Please add any comments here about your experience of teaching around respiratory care

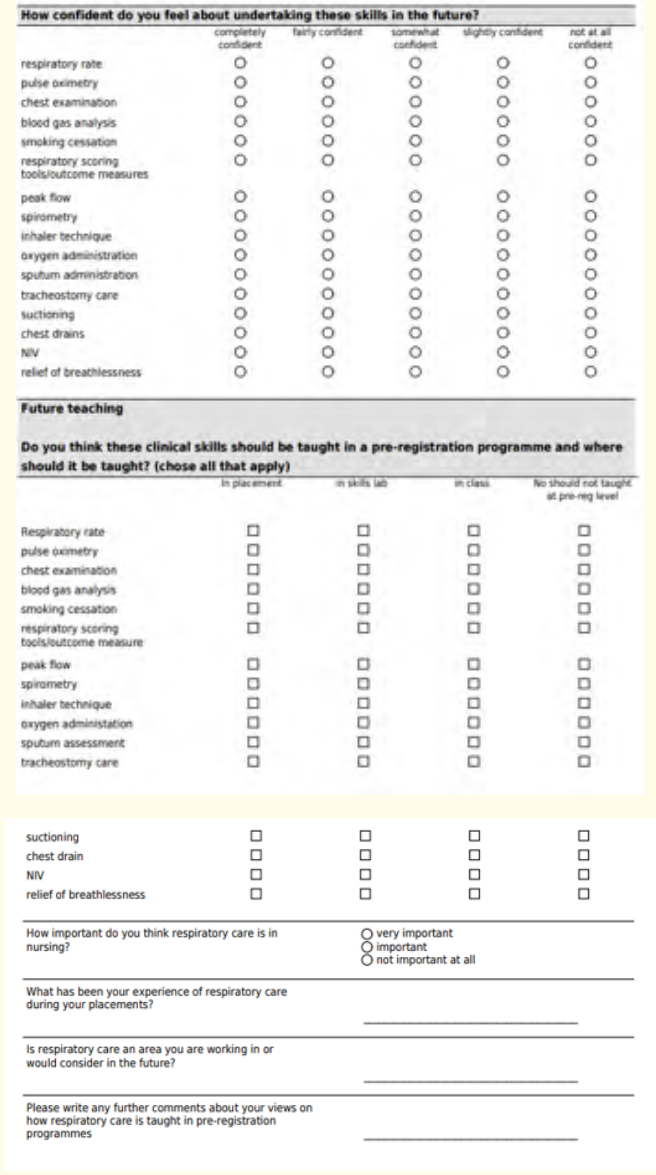
Practice placement experience

Did you get taught any of the following respiratory skills during your placements?

	Yes	No	cannot recall
Respiratory rate	O	O	O
Pulse oximetry	O	O	O
chest examination	O	O	O
blood gas analysis	O	O	O
smoking cessation	O	O	O
respiratory scoring tools /outcome measures	O	O	O
peak flow	O	O	O
spirometry	O	O	O
inhaler technique	O	O	O
oxygen administration	O	O	O
sputum assessment	O	O	O
tracheostomy care	O	O	O
suctioning	O	O	O
chest drains	O	O	O
NIV	O	O	O
relief of breathlessness	O	O	O

Did you get taught any of these skills in a skills laboratory?

	No	Yes	Cannot recall
respiratory rate	O	O	O
pulse oximetry	O	O	O
chest examination	O	O	O
blood gas analysis	O	O	O
smoking cessation	O	O	O
respiratory scoring tools/outcome measures	O	O	O
peak flow	O	O	O
spirometry	O	O	O
inhaler technique	O	O	O
oxygen administration	O	O	O
sputum assessment	O	O	O
tracheostomy care	O	O	O
suctioning	O	O	O
chest drains	O	O	O
NIV	O	O	O
relief of breathlessness	O	O	O



How confident do you feel about undertaking these skills in the future?

	completely confident	fairly confident	somewhat confident	slightly confident	not at all confident
respiratory rate	○	○	○	○	○
pulse oximetry	○	○	○	○	○
chest examination	○	○	○	○	○
blood gas analysis	○	○	○	○	○
smoking cessation	○	○	○	○	○
respiratory scoring tools/outcome measures	○	○	○	○	○
peak flow	○	○	○	○	○
spirometry	○	○	○	○	○
inhaler technique	○	○	○	○	○
oxygen administration	○	○	○	○	○
sputum administration	○	○	○	○	○
tracheostomy care	○	○	○	○	○
suctioning	○	○	○	○	○
chest drains	○	○	○	○	○
NIV	○	○	○	○	○
relief of breathlessness	○	○	○	○	○

Future teaching

Do you think these clinical skills should be taught in a pre-registration programme and where should it be taught? (chose all that apply)

	In placement	in skills lab	in class	No should not taught at pre-reg level
Respiratory rate	☐	☐	☐	☐
pulse oximetry	☐	☐	☐	☐
chest examination	☐	☐	☐	☐
blood gas analysis	☐	☐	☐	☐
smoking cessation	☐	☐	☐	☐
respiratory scoring tools/outcome measure	☐	☐	☐	☐
peak flow	☐	☐	☐	☐
spirometry	☐	☐	☐	☐
inhaler technique	☐	☐	☐	☐
oxygen administation	☐	☐	☐	☐
sputum assessment	☐	☐	☐	☐
tracheostomy care	☐	☐	☐	☐
suctioning	☐	☐	☐	☐
chest drain	☐	☐	☐	☐
NIV	☐	☐	☐	☐
relief of breathlessness	☐	☐	☐	☐

How important do you think respiratory care is in nursing?
○ very important
○ important
○ not important at all

What has been your experience of respiratory care during your placements?
_____

Is respiratory care an area you are working in or would consider in the future?
_____

Please write any further comments about your views on how respiratory care is taught in pre-registration programmes
_____

Figure

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