

Need and baseline for harmonizing nursing education in respiratory care: preliminary results of a global survey

Šajnić, Andreja; Kelly, Carol; Smith, Sheree; Heslop-Marshall, Karen ; Axelsson, Malin; Padilha, Jose Miguel; Roberts, Nicola; Hernández, Carme; Murray, Bridget; Poot, Betty; Narsavage, Georgia

Published in:
Breathe

DOI:
[10.1183/20734735.0172-2021](https://doi.org/10.1183/20734735.0172-2021)

Publication date:
2022

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in ResearchOnline](#)

Citation for published version (Harvard):

Šajnić, A, Kelly, C, Smith, S, Heslop-Marshall, K, Axelsson, M, Padilha, JM, Roberts, N, Hernández, C, Murray, B, Poot, B & Narsavage, G 2022, 'Need and baseline for harmonizing nursing education in respiratory care: preliminary results of a global survey', *Breathe*, vol. 18, no. 3, 210172. <https://doi.org/10.1183/20734735.0172-2021>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please view our takedown policy at <https://edshare.gcu.ac.uk/id/eprint/5179> for details of how to contact us.



Need and baseline for harmonising nursing education in respiratory care: preliminary results of a global survey

Andreja Šajnić ¹, Carol Kelly ², Sheree Smith ³, Karen Heslop-Marshall⁴, Malin Axelsson⁵, José Miguel Padilha ⁶, Nicola Roberts⁷, Carmen Hernández⁸, Bridget Murray⁹, Betty Poot¹⁰ and Georgia Narsavage¹¹

¹Dept for Respiratory Diseases Jordanovac, University Hospital Center, Zagreb, Croatia. ²Respiratory Research Centre, Edge Hill University, Ormskirk, UK. ³School of Nursing and Midwifery, Western Sydney University, Penrith, Australia. ⁴Dept of Respiratory Medicine, Royal Victoria Infirmary Hospital, Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, UK. ⁵Dept of Care Science, Faculty of Health and Society, Malmö University, Malmö, Sweden. ⁶Nursing School of Porto, CINTESIS-Tech4edusim, Porto, Portugal. ⁷School of Health and Life Sciences, Glasgow Caledonian University, Glasgow, UK. ⁸Medical and Nursing Direction, Hospital Clinic de Barcelona University of Barcelona, August Pi i Sunyer Biomedical Research Institute (IDIBAPS), Barcelona, Spain. ⁹School of Nursing and Midwifery, RCSI University of Medicine and Health Sciences, Dublin, Ireland. ¹⁰School of Nursing, Midwifery, and Health Practice, Victoria University of Wellington, Wellington, New Zealand. ¹¹School of Nursing, West Virginia University, Morgantown, WV, USA.

Corresponding author: Andreja Šajnić (andreja.sajnic@gmail.com)



Shareable abstract (@ERSpublications)

The development of a harmonised international education curriculum for respiratory nursing will provide more effective and safer delivery of care to respiratory patients around the globe
<https://bit.ly/3NqMRN7>

Cite this article as: Šajnić A, Kelly C, Smith S, *et al.* Need and baseline for harmonising nursing education in respiratory care: preliminary results of a global survey. *Breathe* 2022; 18: 210172 [DOI: 10.1183/20734735.0172-2021].

Copyright ©ERS 2022

Breathe articles are open access and distributed under the terms of the Creative Commons Attribution Non-Commercial Licence 4.0.

Received: 22 Nov 2021
Accepted: 31 May 2022

Abstract

Background The COVID-19 pandemic confirmed that respiratory nurses are critical healthcare providers. Limited knowledge is available about appropriate education to prepare nurses to deliver high-quality respiratory care. A survey was developed by the International Coalition for Respiratory Nursing (ICRN) group to identify the need for a respiratory nursing core curriculum.

Method A 39-item survey was distributed to 33 respiratory nursing experts in 27 countries. Questions asked about current roles, perception of need, expectations for a core curriculum project and respiratory content in nursing education in their countries.

Results 30 responses from 25 countries were analysed; participants predominantly worked in academia (53.3%, 16/30) and clinical practice (40%, 12/30). In total, 97% (29/30) confirmed a need for a core respiratory nursing curriculum. Post-registration nursing programmes at bachelor (83.3%, 25/30) and masters (63.3%, 19/30) levels include internal/medical nursing care; less than half identified separate respiratory nursing content. The core educational programme developed should include knowledge (70%, 21/30), skills (60%, 18/30), and competencies (50%, 15/30), with separate paediatric and adult content.

Conclusion Survey results confirm a wide variation in nursing education and respiratory nursing education across the world, with many countries lacking any formal educational programmes to prepare nurses capable of providing enhanced quality respiratory care. These findings support the need for a core respiratory curriculum. To advance this significant work the ICRN group plans to conduct a Delphi study to identify core curriculum requirements for respiratory nursing education at pre-registration and advanced educational levels to flexibly meet each country's specific educational requirements for recognition of respiratory nursing speciality practice.

The need for core respiratory nursing education to support harmonisation

The state of the world's nursing report (2020) provides a compelling case on the value of the nursing workforce globally [1]. No global health agenda can be realised without concerted and sustained efforts to maximise the contributions of the nursing workforce and their roles within interprofessional health teams.



Policy interventions must be based on a scientific approach to enable maximum impact of education on care outcomes. Identification of standards that optimise nurses' scope and leadership can accelerate a country's investment in nursing education, skills and positions [1]. The coronavirus disease 2019 (COVID-19) pandemic has magnified and exacerbated a global shortage of nurses able to provide essential respiratory nursing care [2]. How can this need be addressed?

Members of the European Respiratory Society (ERS) nursing group desired to support the harmonisation of nursing education in respiratory care to strengthen the critical role of nurses in caring for patients with respiratory disease, and to effectively promote lung health using advanced knowledge and skills [3]. Specific roles of respiratory nurse specialists include patient education, promotion of self-management, support for early discharge, and long-term care management of people living with respiratory conditions [4, 5]. The question remained as to whether nurses themselves saw the need for a harmonised curriculum and would they engage and contribute to its development?

The importance of continuous education in respiratory nursing care was highlighted at the annual ERS International Congress in 2019 in a nursing session on "Training and development for respiratory nurses" [6]. Concurrently, a qualitative research project identified gaps between the current practice and the visualised future for respiratory nurses in Spain [2]. In addition, global research detected challenges for nurses in their professional development [3]. The ERS nursing group discussed a potential project to develop a harmonised core curriculum, to recognise respiratory nursing as a speciality with specialised clinical academic training and to have a standardised taxonomy for respiratory nursing care. With engagement partnerships and collaboration within scientific societies, we could achieve the specialist role in respiratory nursing. To move towards these goals, in September 2019, the ERS nurses group Chair formed the ERS Nursing Working Group (n=11) with an aim to confirm the need to define and outline the scope of practice, roles, and activities of respiratory nurses globally [3].

Methods

In 2020, under the leadership of the ERS nurses group Chair, an International Coalition for Respiratory Nursing (ICRN) was formed after the ERS International Congress for the development of a harmonised syllabus and curriculum for respiratory nurses. The ICRN brought together academic and clinical expert respiratory nurses and respiratory technologists/scientists (n=134) from a wide range of European Union (EU) and non-EU countries (n=30). The ICRN group was expanded to include other global societies (*e.g.* respiratory therapists) to determine the need for a core respiratory nursing curriculum and to identify current curricula that exist in their countries. If the need were recognised, how would specialist respiratory nurses be able to support curricular development?

A cross-sectional survey was designed to identify current curricula that exist in Europe and other countries, and to identify the need for an international core respiratory curriculum (see supplementary material). The survey also asked about availability of professional educational opportunities in countries represented in the ICRN group. Respondents within and beyond European boundaries were asked about training and certification of respiratory nurses in their countries, as well as the range of minimal educational standards and post-registration training provided.

Survey

The survey consisted of open/closed and free text questions in four sections (table 1 and supplementary material).

An electronically signed consent was included. Data were collected in REDCap (<https://www.project-redcap.org/>) and the ICRN designated a project advisory group of 11 clinical and academic nurse leaders, who piloted the survey for content validity, with minimal changes needed prior to distribution.

TABLE 1 Survey composition

Section topic	Number of questions (n=39)
About you	8
About the project	7
Existing nurse education in your country	13
Existing post-registration education in your country	11

Participants

The electronic survey link was disseminated to respiratory nurse experts, identified as having expertise in respiratory care and knowledge about nursing educational systems for their country. The ICRN panel has 134 members from 30 countries and representatives from 21 respiratory organisations and nursing associations around the globe. The 21 national organisations/nursing associations recommended one representative per country or society to participate in an online survey. For six countries that did not have a national respiratory organisation or nursing association, participants were identified by members of the ERS nursing group; the group directory was used to invite recommended nurses to join and participate by completing the survey. Participants were invited to complete the survey between May and June 2021.

Data analysis

Descriptive analysis of the data was undertaken in SPSS (IBM SPSS Statistics, Version 25.0; IBM Corp., Armonk, NY, USA). For quantitative data, descriptive statistics were used, and data were analysed using SPSS. For the free-text responses when the respondent selected “other” and explained their response, the frequency of different answers was quantified according to identified categories and total responses were summarised for each question/answer [7].

Ethics

As this was a survey study, informed consent was not required; however, an electronic signature indicating consent was included. All data collected were anonymised and any identifiable data were removed prior to analysis.

Results

The survey was distributed to a purposive sample of nurses who had knowledge about respiratory content in nurse education. In all, 33 individuals and 30 responses were included in the final analysis from 25 countries (response rate 90.9%) (supplementary material). Two completed responses were excluded as, upon analysis of their responses, they did not meet the inclusion criteria of having significant expertise in the respiratory field, patient care or nursing. The data from this purposive sample were sufficient to preliminarily confirm the need for a core respiratory curriculum, and to identify the status of respiratory nursing education globally. These preliminary outcomes will be confirmed with a scoping review and a larger sample using the Delphi methodology.

Background characteristics

Background characteristics of the 30 respondents represented 25 countries worldwide (figure 1); reflecting a broad range across most continents except Africa. Respondents were from academic backgrounds (53.3%, 16/30) and clinical roles 40% (12/30), including native (33.3%, 10/30) and non-native English speakers (66.7%, 20/30).

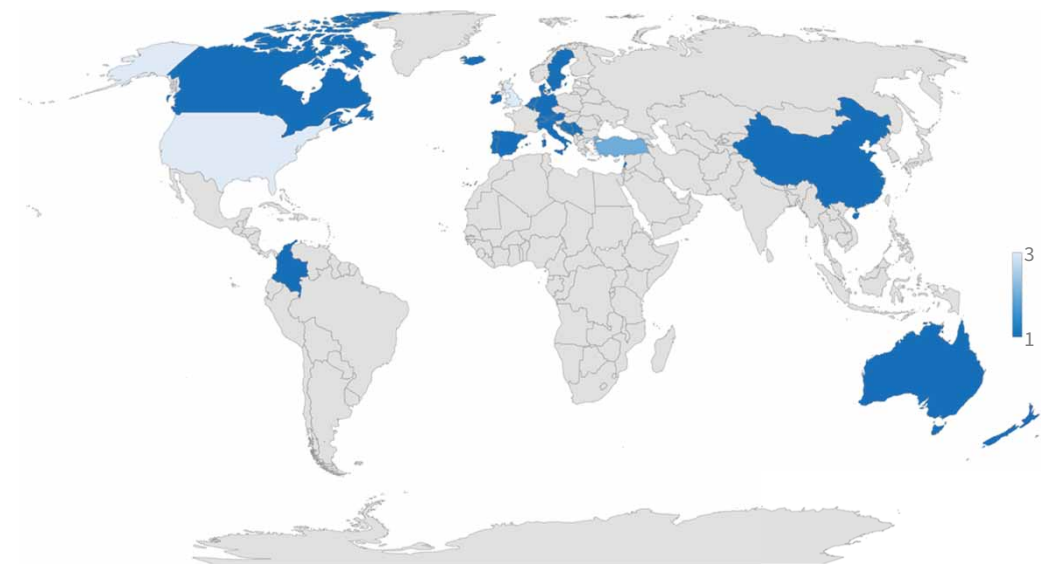


FIGURE 1 Numbers of respondents from each country in the study (blue areas).

Expectations about the project

Nearly all respondents (97%, 29/30) agreed that the aim of developing a core curriculum was to raise standards of respiratory knowledge and skills for patient care. 60% (18/30) thought that the curriculum should enable core standards to be implemented locally, and 50% (15/30) desired a core curriculum to lobby local governments and professional bodies to endorse a minimum set of standards.

The desired framework for the project included: a curriculum which defines components for a programme of study course (70%, 21/30); an educational framework that defines clear standards and outlines knowledge and skills (60%, 18/30) and a competency-based framework with an outline of knowledge and behaviours that could be assessed (50%, 15/30).

A majority of respondents (70%, 21/30) supported separate paediatric and adult curricula, but were equally divided as to whether they should be developed sequentially (46.7%, 14/30) or concurrently (46.7%, 14/30). In addressing which model should be used to structure the curriculum, just over a third (36.7%, 11/30) selected the biopsychosocial model (interconnection between biological, psychological, and socio-environmental factors), 30% (9/30) selected a competency and outcomes model such as entrustable professional activities (EPAs), and just over a quarter (26.7%, 8/30) desired a nursing process model.

Two-thirds (77%, 20/26) of the respondents agreed that it would be important to include patients during the process of developing a core curriculum. A majority (60%, 12/20) wanted to invite or include patient representatives from patients' organisations; 30% (6/20) suggested this could be done by focus groups, interviews or discussions, and 15% (3/20) suggested that patients could be included by survey alone.

Existing nursing education

One key point acknowledged in the survey was that nurse education varies greatly from country to country, ranging from basic nursing schools (high school/or post-high school), undergraduate nursing (bachelor's degree, BSc), graduate nursing (master's degree, MSc) to post-graduate (specialisation or professional doctorate, PhD). In most of the countries surveyed, nursing education is predominately delivered at an undergraduate programme (70.0%, 21/30) as well as at graduate (46.7%, 14/30) and post-graduate programme levels (33.3%, 10/30). All levels included internal/medical nursing care and half of the respondents reported that their country's curriculum included specialised respiratory nursing content (table 2).

Existing post-registration education

Almost two-thirds (60%, 18/30) of the respondent's countries did not have a post-registration educational programme in respiratory nursing. When these programmes were available (n=12), they were predominately delivered at universities (83.3%, 10/12), as continuing professional development for post-registration nurses or at MSc level (66.7%, 8/12). Over 90% (91.7%, 11/12) reported that clinical

TABLE 2 Existing education in the investigated countries (n=30)

General nursing educational programme is performed at:				
High school	8 (26.7%)			
Undergraduate programme	21 (70.0%)			
Graduate studies	14 (46.7%)			
Post-graduate studies	10 (33.3%)			
Content areas related to the respiratory field are within the framework of:	At the basic nursing school level	At the undergraduate nursing school level	At the graduate nursing school level	At the post-graduate nursing school level
Respiratory nursing care	14 (46.7%)	11 (36.7%)	12 (40.0%)	15 (50.0%)
Internal/medical nursing care	24 (80.0%)	25 (83.3%)	19 (63.3%)	13 (43.3%)
Surgical nursing care	11 (36.7%)	12 (40.0%)	11 (36.7%)	10 (33.3%)
Oncological nursing care	6 (20.0%)	8 (26.7%)	6 (20.0%)	7 (23.3%)
Palliative nursing care	6 (20.0%)	9 (30.0%)	9 (30.0%)	10 (33.3%)
Other				
Clinical nursing	1 (3.3%)	1 (3.3%)	3 (9.9%)	3 (9.9%)
Community health and pharmacology	1 (3.3%)	1 (3.3%)	1 (3.3%)	1 (3.3%)
Depends on study and/or master's thesis	0 (0.0%)	0 (0.0%)	3 (9.9%)	4 (13.3%)
Respiratory area not included in the programme	1 (3.3%)	1 (3.3%)	2 (6.6%)	3 (9.9%)
Unknown	0 (0.0%)	1 (3.3%)	1 (3.3%)	3 (9.9%)

experience was needed to enter specific post-registration educational programmes, with a range from 6 months to 2 years of experience.

For those currently without post-registration educational programmes (n=18), respondents said they would consider attending a programme under any circumstance (27.8%, 5/18) or with specific outcomes (such as to apply for a scholarship (11.1%, 2/18), to have their qualification recognised (11.1%, 2/18), or to have documentation of an advanced level of competencies (44.4%, 8/18)).

Existing post-graduate education

Most of the respondents reported that they did not have available post-graduate educational programmes for formal respiratory nursing specialisation (63.3%, 19/30). When these programmes were available (n=11), 90.9% (10/11) reported that clinical experience was needed to enter specific post-graduate educational programmes, with a minimum of between 6 months and 2 years of experience. For those without post-graduate educational programmes in respiratory nursing in their country (n=19), just under a third (31.6%, 6/19) would consider attending a developed programme, 26.3% (5/19) would consider attending under any circumstance, and 31.6% (6/19) would attend if they have documentation of an advanced level of competencies. Only 10.5% (2/19) would not attend if programmes were available.

Discussion

The need and baseline 39-item survey that was distributed to 33 purposively sampled respiratory nursing experts in 27 countries resulted in 30 completed surveys that were analysed. The respondents reported on current roles in academia and clinical practice. The perception of need for a core respiratory nursing curricula was extremely high. The expectations for a core respiratory nursing project focused on a need for knowledge and skills defined to provide a competency-based curriculum framework. There was little consistency in current education with wide variations in respiratory content globally.

Similar to our results, a European survey that was conducted in 17 European countries (49 respondents) by the Association of Cardiovascular Nursing and Allied Professionals (ACNAP) at the European Society of Cardiology meeting demonstrated variability in the content, teaching, learning and evaluation methods in post-registration cardiovascular nurse education programmes in Europe. The ACNAP survey identified that 51% of the cardiovascular nursing education programmes were offered by universities at either bachelor's or master's level [8]. A needs analysis online survey was conducted prior to development of a core curriculum by the ERS physiotherapy group. Their survey was conducted in 36 countries around the globe and demonstrated that extreme variations in assessment of training in respiratory physiotherapy also exist across countries, with 67% of country representatives reporting that no specialty examination exists within respiratory physiotherapy. The authors concluded that the survey supported the justification and rationale to develop a standardised framework for the education and certification of postgraduate respiratory physiotherapy [9]. The purposive survey from nursing supports a need to delineate the scope of nursing practice in respiratory care. While allied health professions and other nursing specialties have already developed precisely defined competencies and educational standards [10–14], respiratory nursing education has wide variations in the types of courses available and enrolment expectations; in many countries specialised respiratory education does not currently exist.

The clear challenge is that higher-level nursing education is influenced by national education systems, statutory and regulatory processes, and by the professionally oriented educational systems developed by each country [15]. There are also a wide range of educational systems for postgraduate nursing programmes, such as specialist and advanced nurse practice programmes including nurse practitioner education [16–18]. However, there is little consistency in respiratory course content, defined requirements for clinical experience, or assessment of clinical competence [17, 18].

Following HERMES methodology guidelines [19], other subgroups (patient representatives, pulmonologists, radiologists, respiratory physiotherapists, and non-specialised nurses working in a primary, secondary or tertiary care setting) will be included in a Delphi process for development of an international curriculum for respiratory nurses. To provide a panel of experts with more response potential and wider feedback, the Delphi process will be modified so that the first two rounds are open not only to expert national respondents in curriculum development but also to clinical members qualified in respiratory nursing/medicine and to trainees in the speciality. Results from these different groups of respondents (other stakeholders) will be analysed separately. Confirmation for support with involvement of patient representatives has been received from the European Lung Foundation, Spanish Society of Pneumology and Thoracic Surgery (SEPAR), Australian Lung Foundation and European Idiopathic Pulmonary Fibrosis and Related Disorders Federation.

Enhancing nursing education harmonisation provides tremendous opportunities for moving forward in providing safe and effective care for people with respiratory diseases. The core curriculum will be designed to be used flexibly, with Delphi process identified significant topics that should be included in respiratory areas of nurse education. Additionally, an educational “bridge” between initial preparation and advanced specialist practice will be suggested. This core curriculum will provide a useful learning framework from which curricula can be integrated to meet each country’s specific needs and priorities in respiratory nursing including core competencies that all respiratory nurses should possess.

Limitations of the study

The authors recognise that the study has some limitations. Based on the purposive small sample, this study may reflect the opinion of higher-educated nurses worldwide. To reflect the true needs of the respiratory nurse working in a particular primary, secondary or tertiary care setting the sample will be expanded in the succeeding steps of the development of the project (*i.e.* the Delphi stage).

Conclusion

The survey results confirm a wide variation in nursing education and respiratory nursing education across the world, with many countries lacking any formal respiratory educational programmes to prepare nurses capable of providing enhanced quality respiratory care. Preliminary findings of the global survey support the need for a core respiratory curriculum. To advance this significant work the ICRN group plans to conduct a Delphi study to identify core curriculum requirements for respiratory nursing education at pre-registration and advanced educational levels to flexibly meet each country’s specific educational requirements for recognition of respiratory nursing speciality practice.

Worldwide, there is a need for recognition of respiratory nurses as especially critical healthcare providers with their own speciality and standardised levels of education to prepare them for an active partnership with other healthcare professionals to tackle patient care for chronic and acute diseases. Acknowledging the work of the ERS to standardise postgraduate medical education in the field of respiratory medicine and to provide professional respiratory medical education [20], and recognising the need for a standardised nursing curriculum and the challenges of having very heterogeneous entry levels for nurses in different countries/regions, with the support of respiratory nurses and professional organisations such as ERS there can be a path forward to harmonise education for respiratory nursing worldwide.

Key points

- The global COVID-19 pandemic has magnified and exacerbated the global shortage of nurses able to provide respiratory nursing care.
- There are many variations in the current state of nurse education for respiratory patient care across the world.
- To provide more effective and safer delivery of care to respiratory patients, there is an urgent need to develop a harmonised core education curriculum for respiratory nursing.
- Nurse respiratory specialists worldwide confirm the need for a harmonised curriculum, have suggestions for a framework, and support a project to develop it.

Acknowledgements: Thank you to the participants, advisors and representees of the nursing groups of societies and nursing associations for supporting this project: Wanda M. Gibson-Scipio, Maureen George, Susan S. Jacobs (Nursing Assembly at American Thoracic Society); Regina H. Rackow, Casey L. Norris (Respiratory Nursing and Interprofessional Collaborative); Samantha Prigmore, Beverley Bostock, Emma Rickards, Kate A. Lippiett, Lindsay Welch (Association of Respiratory Nurse Specialists); Carol Stonham (Primary Care Respiratory Society); Ann McMurray, Viv Marsh, Bethan Almeida (National Paediatric Respiratory and Allergy Nurses Group); Anne-Marie Russell (UK); Karen Corder (UK); Raḥşan Çevik Akyil, Gamze Oğuz, Merve Kıymaç Sari (Turkish Thoracic Society); Kathrin Reimann (Switzerland); Therese Sterner, Caroline Stridsman, Ann-Britt Zakrisson (Swedish asthma-, allergy- and COPD nurses association); Maja Stanojević (Serbia); David Díaz-Pérez, Felip Burgos (Spanish Society of Pneumology and Thoracic Surgery); Carvern Jacobs (South Africa); Belmiro Manuel Rocha (Portuguese Association of Rehabilitation Nurses); Luis Jorge Rodrigues Gaspar, Fernando Miguel Pinheiro Macedo (Portuguese Nurses Association - Order of Nurses); Nicola Corna (College of Respiratory Nurses New Zealand Nurses Organisation); Saskia Wilhelmina Maria Weldam (the Netherlands); Mitar Saveljić (Montenegro); Nour Hawarni (Lebanon); Marco Clari (Italy); Aisling McGowan (Ireland); Aoife Folliard, Paula Ryan (Respiratory Nurses Association of Ireland Anáil); Guðrún Árný Guðmundsdóttir, Aldís Jónsdóttir (Iceland pulmonary nursing association); Janine Wagner, André Heitmann-Möller, Christopher Bublitz (German Society of Pneumology); Helle Marie Christensen (Danish national association for respiratory nurses); Diana Milena Parra Corzo (Colombia); Huaxia Liu (China); Jason Bartell

(Canada); Josipa Tomić, Josip Šimić (Bosnia and Herzegovina); Fatima Snoussi, Daniel Schuermans (Belgian Respiratory Society); Helmut Täubl (Austrian Society of Pulmonology); Sheree Smith (Lung, Sleep and Heart Health Research Network); Adriano Friganović (European Specialist Nurses Organisations). The International Coalition of Respiratory Nurses and Nursing Group 9.03 at the European Respiratory Society is acknowledged for their support in the genesis of the project.

Conflict of interest: A. Šajnić is the ERS Nurses Group Chair and a member of the ELF Advisory Council Committee, disclosures made outside the submitted work. C. Kelly is a member of British Thoracic Society Quality Improvement Committee, this is an unpaid/voluntary position, disclosure made outside the submitted work. S. Smith has received grants or contracts as well as payment or honoraria for educational sessions from GlaxoSmithKline, outside the submitted work. S. Smith is a member of the ERS and ERS College of Experts; American Thoracic Society; Thoracic Society of Australia and New Zealand; Asia Pacific Society of Respirology. K. Heslop-Marshall is the Chair of the Research and Education Committee for Association of Respiratory Nurse Specialists and Co-chair of the Nurse Advisory Group for the British Thoracic Society. M. Axelsson is a member of the International Society for Medication Adherence (ESPAComp), unpaid, voluntary role, disclosure made outside the submitted work. G. Narsavage has received consulting fees from PCORI and HRSA, outside the submitted work. G. Narsavage reports a leadership or fiduciary role in other board, society, committee or advocacy group for CCPH Board (no payment – free webinars, disclosure made outside the submitted work). The remaining authors have nothing to disclose.

References

- 1 World Health Organization. State of the world's nursing 2020: investing in education, jobs and leadership. Geneva, World Health Organization, 2020. www.who.int/publications/i/item/9789240003279
- 2 International Council of Nurses. The Global Nursing shortage and Nurse Retention. Date last accessed: 29 October 2021. Date last updated: 11 March 2021. www.icn.ch/sites/default/files/inline-files/ICN%20Policy%20Brief_Nurse%20Shortage%20and%20Retention_0.pdf
- 3 Arranz Alonso S, Christensen HM, Díaz-Pérez D, et al. Do we need tailored training and development plans for European Union respiratory nurses? *Breathe* 2020; 16: 200010.
- 4 Gibson GJ, Loddenkemper R, Sibille Y, et al., eds. European Lung White Book. Sheffield, European Respiratory Society, 2013. www.erswhitebook.org
- 5 Allied respiratory professionals. In: Gibson GJ, Loddenkemper R, Sibille Y, et al., eds. European Lung White Book. Sheffield, European Respiratory Society, 2013. www.erswhitebook.org/chapters/allied-respiratory-professionals
- 6 Oliveira A, Rutter M, Quijano-Campos JC, et al. ERS International Congress, Madrid, 2019: highlights from the Allied Respiratory Professionals' Assembly. *ERJ Open Res* 2020; 6: 00034-2020.
- 7 Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs* 2008; 62: 107–115.
- 8 Working Group of the Education Committee of the ESC Council on Cardiovascular Nursing and Allied Professions; Working Group of the Education Committee of the ESC Council on Cardiovascular Nursing and Allied Professions. Education for nurses working in cardiovascular care: a European survey. *Eur J Cardiovasc Nurs* 2014; 13: 532–540.
- 9 Mitchell S, Pitta F, Troosters T. Standardised education and training for respiratory physiotherapists. *Breathe* 2013; 9: 171–174.
- 10 Troosters T, Pitta F, Oberwaldner B, et al. Development of a syllabus for postgraduate respiratory physiotherapy education: the Respiratory Physiotherapy HERMES project. *Eur Respir J* 2015; 45: 1221–1223.
- 11 Troosters T, Tabin N, Langer D, et al. Introduction of the harmonised respiratory physiotherapy curriculum. *Breathe* 2019; 15: 110–115.
- 12 Troosters T, Langer D, Burtin C, et al. A guide for respiratory physiotherapy postgraduate education: presentation of the harmonised curriculum. *Eur Respir J* 2019; 53: 1900320.
- 13 Astin F, Carroll DL, Ruppert T, et al. A core curriculum for the continuing professional development of nurses: Developed by the Education Committee on behalf of the Council on Cardiovascular Nursing and Allied Professions of the ESC. *Eur J Cardiovasc Nurs* 2015; 14: 190–197.
- 14 Hinterbuchner L, Coelho S, Esteves R, et al. A cardiac catheterisation laboratory core curriculum for the continuing professional development of nurses and allied health professions: developed by the Education working group of the Nurses and Allied Professions Committee for the European Association of Percutaneous Cardiovascular Interventions (EAPCI) 2016. *EuroIntervention* 2017; 12: 2028–2030.
- 15 German Millberg L, Berg L, Lindström I, et al. Tensions related to implementation of postgraduate degree projects in specialist nursing education. *Nurse Educ Today* 2011; 31: 283–288.
- 16 Palese A, Zabalegui A, Sigurdardottir AK, et al. Bologna process, more or less: nursing education in the European economic area: a discussion paper. *Int J Nurs Educ Scholarsh* 2014; 11: 63–73.
- 17 Boyle M, Butcher R, Conyers V, et al. Transition to intensive care nursing: establishing a starting point. *Aust Crit Care* 2008; 21: 190–198.

- 18 Aitken LM, Currey J, Marshall A, *et al.* The diversity of critical care nursing education in Australian universities. *Aust Crit Care* 2006; 19: 46–52.
- 19 Loddenkemper R, Séverin T, Eiselé JL, *et al.* HERMES: a European Core Syllabus in Respiratory Medicine. *Breathe* 2006; 3: 59–69.
- 20 Farr A, Gaga M, Welte T, *et al.* The European Respiratory Society: ensuring excellence through education best practice. *Eur Respir J* 2018; 52: 1801248.