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NMC Nursing &
Midwifery
Council

Review of Minimum Education and Training Standards in Nursing and Midwifery – Desk Based Research

Evidence review final report

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Executive Summary

Background, aims and objectives

The standards for nursing and midwifery education and training in the United Kingdom (UK) are aligned with the European Union (EU) Directive 2005/36/EC 'on the recognition of professional qualifications' ("the Directive") which establishes minimum EU wide standards for the education and training of nurses responsible for general care and midwives. For nurses and midwives, the Directive stipulates the criteria for formal qualifications in terms of: programme length/ number of hours; number of hours (nursing) or ratio (midwifery) of theory and clinical practice learning; where simulation may be permitted (midwifery); rules around recognition of prior learning (RPL) (nursing); selection, admission and progression; rules around entry to shortened programmes¹.

The EU requirements have been incorporated into the Nursing and Midwifery Council (NMC)'s pre-registration education standards for many years but the requirement to comply with the EU Directive ceased when the transition period for the UK's departure from the EU ended on 31 December 2020.

Harlow Consulting was commissioned by the NMC to evaluate the evidence on the impact and effectiveness of the EU Directive, and alternatives, to enable the NMC to critically explore whether the requirements of the Directive are necessary to achieve the standards of proficiency to be admitted to the register.

Methodology and approach

This report draws together the findings from an extensive evidence review, using a rapid evidence assessment (REA) methodology. The research was conducted between December 2020 and March 2021, via a review of international evidence on the impact and effectiveness of the EU Directive, and an international benchmarking exercise comparing approaches taken to pre-registration education and training in other countries and by comparable health professional regulators. Four comparator professions² and eight international comparator countries³ were included in the benchmarking review. The benchmarking report sets out the rationale for the choice of comparators.

This report presents findings on the impact of the EU Directive on nursing and midwifery education in the UK. It draws on the international benchmarking report to describe alternative approaches to key aspects of the Directive such as programme length, split of theory practice hours and use of simulation. The main objectives for this part of the review were to explore what evidence exists on the effectiveness and impact of the EU requirements, and of alternatives.

The academic evidence used in this research was quality assessed on criteria such as the research design, analysis methods and results. The quality assessment is contained in an appendix to this report. The Themes and outcomes on the following page were pre-defined parameters set by the NMC as the main areas for investigation for this study.

Themes (EU requirements for pre-registration education programmes)	Regulatory outcomes
<ol style="list-style-type: none"> 1. Selection, admission, and progression 2. Entry to shortened midwifery programmes 3. Recognition of prior learning (RPL) 4. Content (including specific clinical proficiencies for midwifery) 5. Practice hours and use of simulation 6. Programme length and number of academic theory and practice hours 	<ol style="list-style-type: none"> 1. Public protection and safety 2. Effectiveness and quality of care for people who use services 3. People with different protected characteristics (including nurses, midwives, nursing associates, students and people who use services) 4. The experiences and perceptions of nurses, midwives, nursing associates and students 5. The number and supply of nurses, midwives and nursing associates 6. Effectiveness, availability and quality of education programmes

A separate, primary research study was also commissioned by the NMC to gather stakeholder views. The findings from that research along with those from this evidence review and the international benchmarking are assimilated into a separate, overarching synthesis report.

Themes for investigation

The summary below draws on the findings from the evidence review on the impact of the EU Directive and the international benchmarking review.

Selection, admission and progression

This evidence review found no direct evidence of the impact of entry criteria for nursing and midwifery programmes on the outcomes within the scope of this review. A 2015 evaluation of the NMC's pre-registration education standards found broad support for the current entry criteria, although respondents suggested they could be tightened to achieve greater consistency between approved education institutions (AEIs)⁴.

Entry to shortened midwifery programmes

The evidence review found no recent literature on the impact of shortened courses for **nursing** and only one study on shortened programmes for **midwifery**⁵. This study confirms there is a lack of evidence on the subject, but also highlights that student nurses on shortened midwifery programmes bring skills that are vital to midwifery. Despite this, the Benchmarking Review found that shortened **midwifery** programmes – available for registered nurses through advanced standing status – are common in different countries, such as Ireland and Australia.

Recognition of prior learning (RPL)

This review has not found any evidence on Recognition of Prior Learning (RPL) that meets the inclusion criteria, confirming a lack of evidence on the subject. While RPL is generally permitted for **nursing** education, both inside and outside the EU, standards rarely set out specific guidelines surrounding RPL, with decisions made at the institution level. In the EU, RPL is not permitted for pre-registration **midwifery** courses. However, shortened midwifery courses for registered nurses (also see below) are common both within and outside of the EU. In New Zealand, shortened midwifery courses are also offered for registered practitioners of other healthcare professions.

Content

Despite varying in the level of detail they contain, educational standards for **nursing** and **midwifery** in each country tend to be aligned to the core competencies set at a national level by the regulator or other policy makers. In EU and non-EU countries, **midwifery** education and training requirements are more specific than nursing (e.g., in specifying number of births etc.). The EU Directive does not stipulate this level of detail for other professions.

An EU commissioned evaluation of the EU Directive for **midwifery** (2016) found the minimum training requirements needed to be updated and centred on more contemporary language used⁶. The NMC's Standards of Proficiency for Midwives largely exceed the EU requirements and cover many of the skills which have been found to be lacking from the Directive⁷. A 2018 mapping exercise by the European Midwives Association suggested the language of the Directive needed updating to reflect the ICM definition of the midwife and the Framework for Quality Maternal and Newborn Health from the Lancet series on Midwifery⁸.

Practice hours and simulation

Studies have focused on comparing the number of clinical practice hours in different pre-registration programmes in an attempt to identify the optimum number, however there is no agreement on the type, quality or quantity of hours that are necessary to produce a competent **nurse or midwife**.

This review has found a small number of studies relating specifically to the substitution of simulation for clinical practice (rather than simulation per se, for example where it is used in addition to clinical practice)^{9,10,11}. Most of the evidence is for **nursing** and emanates from the USA where the use of simulation is widespread and where the proportion of simulation that replaces clinical hours is highly variable.^{12,13,14} The most robust study, conducted in the USA, measured the effect of replacing either 25% or 50% of students' total clinical hours with simulation on 10

nursing programmes. There was no meaningful difference in the overall performance of students who experienced simulated clinical teaching, compared to those who receive traditional clinical experiences. The study concluded that up to 50% of clinical hours can be replaced by simulation¹⁵.

However, the question of the optimum ratio of clinical practice to simulation is not answered in the evidence. Some **nursing** schools in the USA adopt a ratio of 1:1 or even 1:2. But 2:1 clinical practice to simulation appears to be most common¹⁶. This review has not found any evidence that met the inclusion criteria on the ratio of clinical practice to simulation for **midwifery**.

Despite the suggestion that simulation can effectively replace a proportion of clinical practice hours, the evidence base notes a number of caveats:

- Inconsistencies in the design, implementation and assessment methods used for simulation in **nursing** education. The lack of a consistent approach in the use of simulation – and lack of a standard definition of simulation learning - means that it is difficult to evaluate the contribution of simulation education to students meeting their **learning outcomes**.^{17,18}
- Empirical evidence on the **effectiveness of simulation** in **nursing** education compared to other pedagogical approaches is limited. More research is needed to explore the transferability of simulation learning to real patient situations and the clinical environment^{19,20,21} and it is unclear how simulation learning transfers to the clinical environment; studies do not tend to report on the impact on clinical outcomes²².

Programme length and number of academic theory and practice hours

The benchmarking research identified that the minimum length of **nursing** and **midwifery** pre-registration education programmes in the UK (3 years) is broadly similar to those in comparator countries. However, these programmes are shorter than the comparator professions of doctor (5 years + 2 years' foundation), dentist (5 years + 1 year foundation) and pharmacists (4 years + 1 year foundation). Physiotherapists are required to undertake 3 years of education and training, like nurses and midwives. The EU Directive does not specify a minimum number/ split of theory and practice hours for the comparator professions, as it does for both nursing and midwifery.

There is a great deal of variation in the balance of clinical practice hours and theory across the comparator countries, and also within countries (e.g. the USA). However, it is more typical for a minimum number of clinical practice hours to be stipulated than theory hours. However, recent research into nursing education in the USA found no observable correlation between the minimum number of practice hours, mandated by different US states, and student performance on the NCLEX exam²³ (the national licensing exam).

Regulatory outcomes

The key outcomes of interest for the NMC (as listed below) are not well addressed in the literature, specifically within the context of the EU Directive. Some of the outcomes are broad and may be influenced by various factors in combination – social, political, economic – therefore the impact of the EU Directive is likely to be extremely difficult to measure. Assessments of the impact of the Directive are also made more challenging by the fact that some countries' associated standards for education (for example, the NMC's standards of proficiency) surpass some of the element of the EU requirements, meaning that health and learning outcomes may owe themselves more to effectiveness of an individual country's standards than to the EU Directive. This may be why the subject is not well researched.

This review found only two studies meeting the inclusion criteria that explicitly mention the EU Directive; other literature tends to be tangential.

- Henriksen et al, suggest that, in Europe, the EU Directive places restrictions on the use of simulation in **nursing** education because of the way it defines clinical practice as 'in direct contact with a healthy or sick individual.' The study, focusing on clinical practice in nursing education in the Nordic Countries, points out that this definition places limitations on the use of simulation, such that 'the directives can be seen in this respect as a hindrance to pedagogical development.'²⁴
- Kirwan et al suggest challenges of embedding patient safety in pre-registration education programmes for **nurses** are not always acknowledged²⁵. They suggest that the EU requirements are currently too focused on the movement of nurses and the curriculum should be updated to include further guidance on patient safety.

This review found no evidence that met the inclusion criteria for the outcome of number and supply of nurses, midwives, nursing associates and students in relation to the impact of the EU Directive.

Public protection and safety

This evidence review found that – with the exception of Kirwan's review – research on public protection and patient safety is not extrapolated to the context of the EU Directive. Studies often focus on specific areas of education or practice, for example, the embedding of theory and practice in the teaching of handwashing and disposal of PPE; closing a perceived theory-practice gap around infection control; and incorporating intentional rounding in **nursing** education programmes.²⁶

Effectiveness and quality of care for people who use services

This outcome is challenging to measure from the literature as it tends to focus on the perspective of user involvement in student recruitment and assessment, for example^{27,28}. Neither the evidence review, nor the benchmarking review, found any evidence meeting the inclusion criteria that pertains specifically to effectiveness and quality of care within the context of the impact of the EU Directive. It is therefore not possible to form a solid view on this theme.

Impact on people with different protected characteristics

This subject does not arise often in the literature. This evidence review found one UK study meeting the inclusion criteria which reported on the experiences and outcomes of undergraduate **health professional students** with protected characteristics²⁹. The study reported on academic difficulties encountered by students with dyslexia, dyspraxia and dyscalculia as well as on the challenges faced by ethnic minority students in undergraduate healthcare education, drawing out negative themes of discriminatory racial stereotyping, lack of ethnic role models and exclusion from peer groups as issues experienced by student **nurses** in the UK³⁰.

Experiences and perceptions of nurses, midwives, nursing associated and students

Of the outcomes within scope of this evidence review, most of the evidence relates to the theme of experiences and perceptions of **nursing** and **midwifery** students. However, the literature does not establish links between experiences and the requirements of the EU Directive, and the studies are small scale. The main findings of those studies point to elevated levels of stress amongst students undertaking clinical placements, as well as a deficit in some areas of competence. Major sources of student stress on clinical placements are unsupportive supervisors, concerns surrounding clinical competence and fears of causing patients harm, along with the confusion at witnessing practices on placement which are incongruent with what they were taught in classes^{31,32,33}.

Other themes relating to student experience include satisfaction with specific types of learning practice or intervention, such as reflective practice and experiences of simulation and skills practice. These experiences tend to be positive.

Effectiveness, availability and quality of education programmes

The evidence and benchmarking reviews found few studies on this topic within the inclusion criteria. One exception is Henriksen et al who emphasise that the definition of clinical practice in the EU Directive places restrictions around the replacement of clinical learning hours with simulation, potentially impacting on the effectiveness of **nursing** programmes³⁴. Another theme in the literature is a theory practice gap and a lack of clinical skills amongst **nursing** students.^{35,36} This review has found very limited evidence on the extent to which skills and knowledge are retained by students when they enter practice.

Are the requirements of the EU directive necessary to achieve the standards of proficiency to be admitted to the register?

The NMC's standards of proficiency surpass the content requirements of the EU Directive, for both nursing and midwifery. For midwifery, the content requirements set by EU comparator countries comply with the International Confederation of Midwives' (ICM) Global Standards for Midwifery Education. The UK's approach is also compliant in terms of 50% of programme length being devoted to clinical practice hours.

However, in areas such as the optimum number and balance of theory and clinical hours for either nursing or midwifery, the findings are inconclusive. This review has not identified any evidence to suggest that the number of hours has an impact on outcomes. Entry requirements and programme length appear to be on par with other countries, as are approaches to RPL; however, there is a lack of evidence to suggest whether the EU Directive, or the approaches in respective countries, have a positive impact on the outcomes in scope of this review.

Do the requirements of the EU directive have any influence on outcomes (e.g. public safety; effectiveness and quality of care etc.)?

This evidence review has found a paucity of evidence on the impact, or influence, of the EU Directive on the outcomes within scope. This is likely because the requirements have been in place for some time and there is no consistent, comparable baseline across EU countries for measuring impact. The impact of the EU Directive is an under-researched topic.

However, it is possible to infer from the limited pool of evidence that the requirements of the Directive might have had a limiting effect of the use of simulation in nursing and midwifery pre-registration education and training because:

- of the way that clinical practice is defined for nursing programmes
- simulation in midwifery pre-registration education is only permitted in two situations

It may also be possible that the prohibition of RPL for midwifery courses has had a limiting effect on the number of midwifery graduates. However, this evidence review has found no evidence to support this assertion.

Are there alternative requirements that could be incorporated into the NMC's pre-registration nursing and midwifery education standards that would potentiate the education of students to achieve the standards of proficiency, and the impact of any alternative requirements on the factors listed above?

In general, the international benchmarking review has found that pre-registration education programmes in comparator countries take similar approaches to those in the UK for both nursing and midwifery – e.g. requirements on programme length; stipulation on ratio of hours; stipulation of entry requirements (although these are usually set at the institution level); approaches to RPL.

Exceptions pertain to the use of preceptorship training or internships – which are not addressed for nursing and midwifery in the EU Directive – and which may be useful to consider for the UK context; a year's foundation training is also a feature of the pre-registration education and training for the comparator professions. However, this review has not found any evidence to confirm preceptorships or internships have an impact on the outcomes within scope of this review.

There may be a case for augmenting existing requirements: a clear case is the use of simulation. This evidence review has found evidence to suggest that simulation can be a useful means of using practice hours more efficiently, and that substitution of simulation for clinical practice hours has no discernible effect on student outcomes.

Furthermore, use of simulation for certain tasks could help to alleviate student concerns and experiences of stress, for example:

- evidence suggests simulation helps to build crucial skills such as team-work and communication
- many of the simulation studies – which use a pre- and post-test design – show improved levels of student confidence after completion of the respective simulation activity undertaken³⁷.

However, success is dependent on good quality mentorships and supervision as well as opportunities for the student to reflect on their learning.



1. Background and methodology

1.1 Introduction

1.1.1 Background

The Nursing and Midwifery Council (NMC) is one of 10 professional health and care regulators in the UK³⁸ and is responsible for regulating almost 732,000 nurses, midwives in the UK and nursing associates in England. Its purpose is to:

“Promote and uphold the highest professional standards in nursing and midwifery to protect the public and inspire confidence in the professions.”

The NMC achieves this purpose by performing four roles:

1. Maintaining the **register of nurses and midwives who meet the requirements for registration in the UK, and nursing associates** who meet the requirements for registration in England.
2. Setting the **requirements of the professional education** that supports people to develop the knowledge, skills and behaviours required for entry to, or annotation on, our register.

3. **Shaping the practice of the professionals on our register** by developing and promoting standards including our Code, and we promote lifelong learning through revalidation.
4. **Investigating and taking action** where serious concerns are raised about a nurse, midwife or nursing associate’s fitness to practise³⁹

The NMCs standards for nursing and midwifery education and training in the UK are aligned with the EU Directive 2005/36/EC ‘on the recognition of professional qualifications’ (“the Directive”)⁴⁰ which establishes minimum EU wide standards for the education and training of nurses responsible for general care (adult nurses in the UK)⁴¹ and midwives. It also sets out requirements for a number of other health professions including medical doctors, dentists and pharmacists.

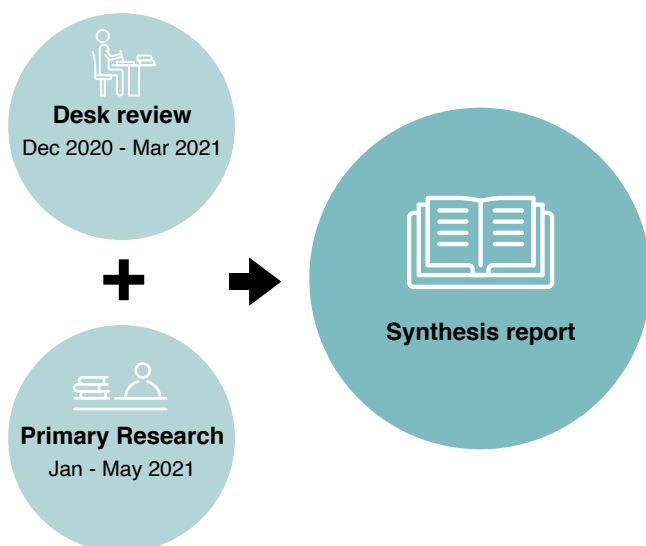
These requirements in the EU Directive form the basis of automatic recognition of qualifications for these professions between Member States. The NMC’s standards comply with the requirements set out in the EU directive and they form part of the NMC’s pre-registration nursing and midwifery education standards.

Since the requirement to comply with these standards ceased when the transition period for the UK’s departure from the EU ended on 31 December 2020, the EU related requirements will be reconsidered within the NMC’s legislation.

The EU requirements have been incorporated into the NMC's pre-registration education standards for many years, therefore they cannot be removed or changed until the NMC undertake a public consultation exercise on any possible changes.

To inform any potential future discussion, Harlow Consulting was commissioned in November 2020 to help the NMC evaluate the evidence for retaining and or reforming the EU requirements in its current education standards.

Alongside this evidence review, the NMC also commissioned a separate primary research study to elicit stakeholder views on the themes and outcomes for investigation listed in section 1.2, table 2. The findings of the primary research will be assimilated with the key findings of this desk study into an overarching synthesis report which will address the key research questions.



1.1.2 Aims and objectives of this study

The overall aim of this study is to provide evidence from the reviewed literature to inform the NMC's understanding of whether the requirements of the EU directive are necessary to achieve the standards of proficiency to be admitted to the register. In meeting this aim, the NMC also wishes to understand whether the requirements of the EU directive have any influence on:

- Public protection and safety
- Effectiveness and quality of care for people who use services
- People with different protected characteristics (including nurses, midwives, nursing associates, students and people who use services)
- The experiences and perceptions of nurses, midwives, nursing associates and students
- The number and supply of nurses, midwives, and nursing associates⁴²
- Effectiveness, availability, and quality of education programmes.

The NMC has a number of priority themes for investigation within the regulatory outcomes above; these themes relate specifically to the EU requirements, namely:

1. Practice hours and use of simulation
2. Programme length and number of academic theory and practice hours
3. Selection, admission, and progression
4. Recognition of prior learning (RPL)
5. Entry to shortened midwifery programmes
6. Content (including specific clinical proficiencies for midwifery)

In response to the above, Harlow Consulting is delivering two services:

1. A review of existing international evidence including academic research and grey literature (such as policy papers and stakeholder evidence).
2. An international benchmarking review of approaches taken to pre-registration education and training by comparable health professional regulators.

This report covers service one and provides a review of the evidence relevant to the outcomes and NMC priority areas for investigation. This report also draws on the findings of the international benchmarking review.

Two interim reports were submitted to the NMC as part of this commission: the first in January 2021 on simulation learning, the second in February 2021 on practice hours.

The benchmarking review compared four professions and eight international comparator countries, as summarised in Table 1.

Table 1: Comparator professions and countries for the benchmarking study

Comparator professions	Comparator countries
<ul style="list-style-type: none"> ▪ Medical doctors ▪ Dentists ▪ Pharmacists ▪ Physiotherapists 	<ul style="list-style-type: none"> ▪ Ireland ▪ Sweden ▪ Spain ▪ Canada ▪ Australia ▪ New Zealand ▪ USA ▪ The Philippines

The professions were selected on the grounds of: each being represented by a different regulator; all requiring a similar level of educational attainment (i.e., a degree); three professions being also included in the EU Directive (medical doctor, dentist, pharmacist) and one as a comparator (physiotherapist).

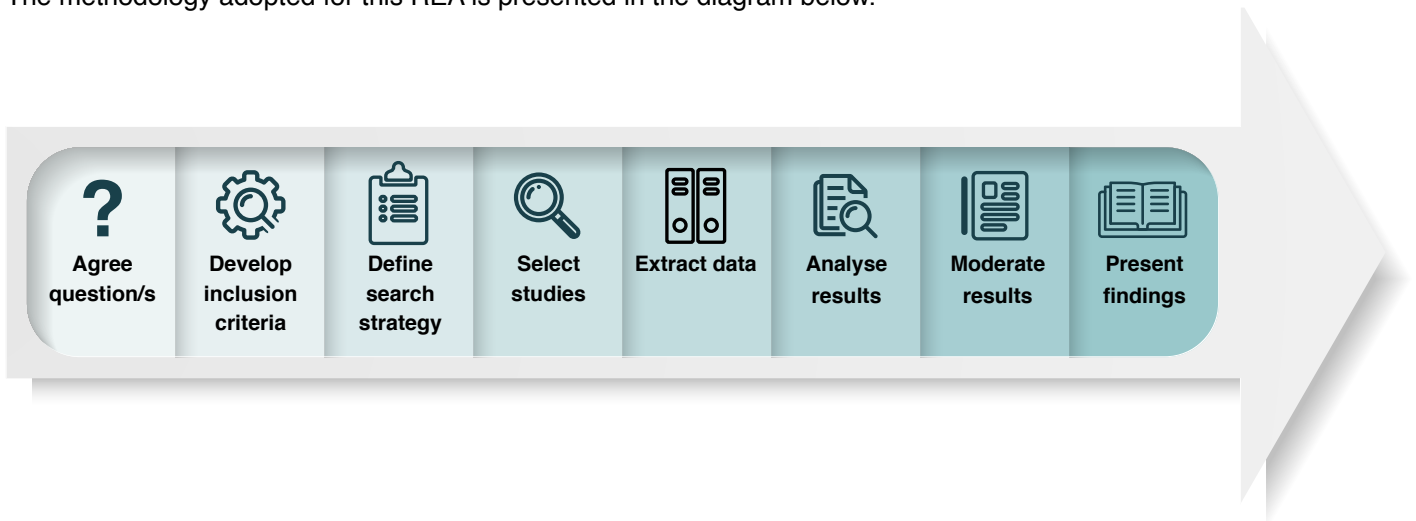
The countries were selected to cover a range of factors and variables: EU and non-EU countries of a similar size and education landscape; countries with and without occupational licensing; countries with a high input into the UK workforce.

1.2 Methodology and scope

This research was undertaken via a rapid evidence assessment (REA) to identify, assimilate and report on evidence within the short timescales for this study (December 2020 – March 2021).

An REA involves a systematic approach to identifying relevant studies and selecting the most appropriate ones based on specific criteria. A qualitative assessment is then undertaken to determine the quality of the sources identified using pre-defined parameters including methodological quality. The 'rapid' nature of an REA means that the approach is less broad and deep than a systematic review, which can take many months or over a year. An REA involves interrogating a limited number of databases and setting strict inclusion and exclusion criteria to tightly define its scope. Data extraction typically involves recording key bibliographical information and abstracts. Critical appraisal of sources is then conducted using this information.

The methodology adopted for this REA is presented in the diagram below.



The **research objectives and questions** were set out in the invitation to tender for this study and are listed in Table 2.

Table 2: Research objectives and questions

Objectives	<ol style="list-style-type: none">1. To explore what evidence exists regarding the effectiveness and impact of the EU minimum education and training requirements on the following outcomes:<ul style="list-style-type: none">▪ Public protection and safety▪ Effectiveness and quality of care for people who use services▪ People with different protected characteristics (including nurses, midwives, nursing associates, students and people who use services)▪ The experiences and perceptions of nurses, midwives, nursing associates and students▪ The number and supply of nurses, midwives and nursing associates▪ Effectiveness, availability and quality of education programmes2. To explore what existing evidence exists in relation to the effectiveness and impact of alternatives to the EU minimum education and training requirements on the outcomes above.3. To explore the standards for pre-registration education that exist in other countries, sub-national regions, and for other UK health professionals, and the evidence on the efficacy of these on outcomes above.
Questions	<ol style="list-style-type: none">1. Are the requirements of the EU directive necessary to achieve the standards of proficiency to be admitted to the register?2. Do the requirements of the EU directive have any influence on the outcomes above?3. Are there alternative requirements that could be incorporated into the NMC's pre-registration nursing and midwifery education standards that would potentiate the education of students to achieve the standards of proficiency, and the impact of any alternative requirements on the factors listed above?

This report pertains to objectives 1 and 2, above.

Scope and inclusion criteria

This research is concerned with pre-registration education of nurses and midwives, only; this may be at undergraduate or post-graduate level (e.g. a masters pre-registration programme). Post-registration training or ongoing learning – in the form of Continuing Professional Development (CPD) – is not being considered within this evidence review.

Table 3 sets out the inclusion criteria agreed with the NMC at project inception to set the scope and boundaries for the review.

Table 3: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria	Notes/rationale
English language	Papers not in English	Sources were restricted to the English language because of the additional time and cost that would be involved in translation
Peer-reviewed journal articles, conference presentations, PhD theses/ dissertations, government reports; NMC consultation findings	Books, PowerPoint presentations and posters, press articles, other media	Books, PowerPoint presentations, posters, press articles and other media were excluded to limit the scope to the most reliable and robust material
The paper reports on an empirical study or systematic review/ commentary/discussion article addressing the topic	Protocols, single case studies	Protocols and single case studies were excluded because generalisability is not possible from these types of sources
Published 1 January 2015 – 1st October 2020	Published prior to 2015	The date of 2015 was set by the NMC in the invitation to tender for this commission
Nursing and midwifery	Other healthcare professions (except in the case of the international benchmarking and for evidence on simulation and the substitution of clinical practice hours)	

It should be noted however that where the review identified high-profile and/or often cited sources that did not meet the inclusion criteria, these were included on an 'exceptions' basis.

Search strategy and study selection

Academic articles:

Multiple databases were used to search for relevant and credible sources of evidence. Content on these databases is regularly updated, with information coming from many different sources. The risks of identifying/using sources which may contain errors, or omission of key sources are mitigated as much as possible through the use of more than one database, rather than sole reliance on a single one.

Appendix 1 lists the databases and search terms used. Searches were carried out against the 'title' and 'abstract' fields.

A filter was applied to all sources returned in the searches to isolate those published from 2015 onwards. These studies were archived in Mendeley⁴³.

Grey literature:

Grey literature sources have been included to add context to the findings. These sources include, for example, NMC standards, the EU Directive, policy papers and websites.

For the grey literature, inclusion/exclusion criterion 4 was not applied as some of the latest up to date factual information was published pre-2015. Criterion 3 did not apply.

Data extraction, analysis and moderation

For the academic sources, after duplicates were removed, titles and abstracts were reviewed by two reviewers against the inclusion criteria and screened for relevance against the outcomes listed under the first objective for this study and against the NMC's priority areas for this research (Table 4).

Table 4: Themes and outcomes for investigation

Themes (EU requirements for pre-registration education programmes)	Regulatory outcomes
1. Practice hours and use of simulation	1. Public protection and safety
2. Programme length and number of academic theory and practice hours	2. Effectiveness and quality of care for people who use services
3. Selection, admission, and progression	3. People with different protected characteristics (including nurses, midwives, nursing associates, students and people who use services)
4. Recognition of prior learning (RPL)	4. The experiences and perceptions of nurses, midwives, nursing associates and students
5. Entry to shortened midwifery programmes	5. The number and supply of nurses, midwives and nursing associates
6. Content (including specific clinical proficiencies for midwifery)	6. Effectiveness, availability and quality of education programmes

Bibliographical details of these sources were then entered into a filterable spreadsheet database, along with the themes addressed.

Analysis/quality assessment

For academic articles, a second stage involved accessing the full text articles of the sources for full review and data extraction. A quality assessment for trustworthiness was based on a hybrid framework that draws on NICE guidance on examples of checklists that can be used to assess risk of bias or quality of studies. The following information was recorded for each source and used in the quality review:

- Study type (e.g. systematic review, meta-analysis, RCT)
- Number of studies/population
- Characteristics and setting
- Intervention
- Comparison
- Outcomes and analysis methods
- Results
- Number of citations

An assessment based on the principles of GRADE (Grading of Recommendations, Assessment, Development and Evaluations) ratings of ‘certainty’ was then assigned to each source. GRADE is a transparent framework for developing and presenting evidence, published by the British Medical Journal (BMJ). It is typically used as a systematic approach for making clinical practice recommendations. The gradings are listed in Table 5.

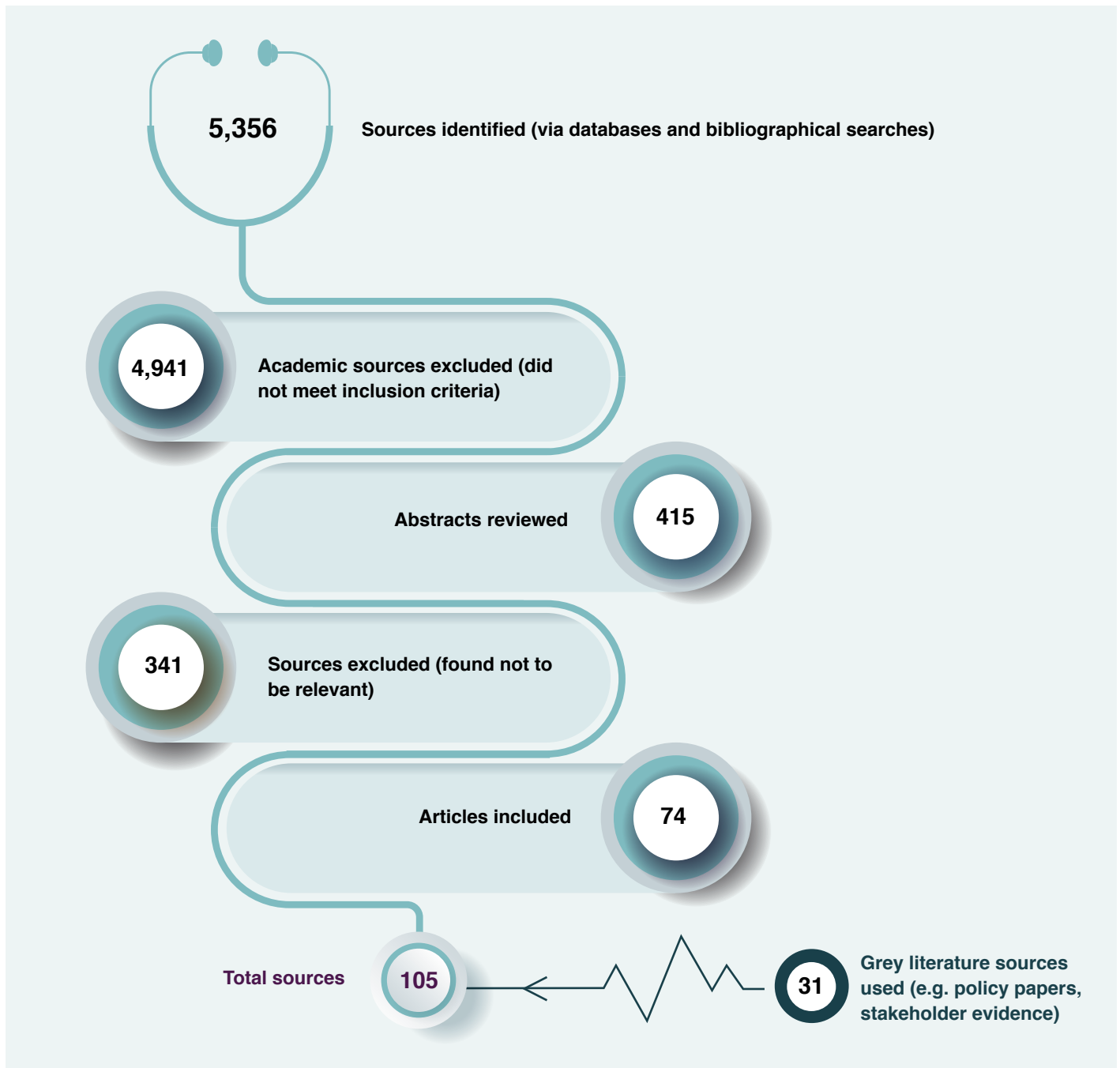
Table 5: GRADE certainty ratings

Grading	Description
Very low	The true effect is probably markedly different from the estimated effect
Low	The true effect might be markedly different from the estimate effect
Moderate	The authors believe that the true effect is probably close to the estimated effect
High	The authors have a lot of confidence that the true effect is similar to the estimated effect

For this study, the ‘certainty’ gradings of ‘very low’, ‘low’, ‘moderate’, and ‘high’ have been used to rate the trustworthiness of evidence pertaining to the outcomes listed under objective 1 for this research, and the NMC priority areas for investigation. The gradings have been applied to both qualitative and quantitative research studies. The highest ratings are given to studies including meta-analyses, studies with a strong methodological design and analysis framework and/or achieved a high response rate. The lowest ratings are given to studies with poor response rates, weak design, those which are largely based on opinion or which draw on few sources.

The assessments were performed independently by two researchers. Moderation was then conducted using random sampling of the sources.

The flow chart below illustrates how many academic studies were identified using open searches of academic databases, how many were excluded based on the exclusion criteria, how many abstracts were reviewed and how many full text articles were included in this report. The flow chart also shows the number of grey literature sources (e.g. policy papers, stakeholder evidence) that were used. These sources were not quality assessed.



In total, 105 sources (academic sources and grey literature) were used in this report.

- Academic studies were assessed for their quality. The results of the quality assessment are contained in appendix 2.
- Grey literature included policy reports and stakeholder evidence. These sources were not quality assessed and all relevant sources were included in this review.



2. Outcomes and links to the EU Directive

2.1 The EU Directive

The EU Directive 2005/36/EC regulates the 'mutual recognition' of professional qualifications within the European Union. It was introduced to facilitate automatic recognition and free movement of certain professions; those who benefit are: nurses, midwives, doctors (basic medical training, general practitioners and specialists), dental practitioners, pharmacists, architects and veterinary surgeons⁴⁴. Prior to its introduction, provisions were laid down in the Union Treaties through Article 57 of the 1957 Rome Treaty. Currently, Article 53 of the Treaty on the Functioning of the EU (TFEU) is the legal basis for EU instruments on professional recognition⁴⁵.

Specifically, the Directive 2005/36/EC sets the rules for:

- temporary mobility – this scheme allows professionals to work in another EU country on the basis of a declaration made in advance
- establishment in another EU country – the directive lays down rules for professionals who want to establish themselves as
 - an employed or self-employed person on a permanent basis
 - in a country where they didn't obtain their professional qualification

- systems of recognition of qualifications – there are 3 systems of recognition
 - automatic recognition – for professions with harmonised minimum training conditions (i.e. **nurses, midwives**, doctors (basic medical training, general practitioners and specialists), dental practitioners, pharmacists, architects and veterinary surgeons)
 - general system – for other regulated professions such as teachers, translators and real estate agents
 - automatic recognition on the basis of professional experience - for certain professional activities such as carpenters, upholsterers, beauticians etc.
- knowledge of languages and professional academic titles⁴⁶

For the professions of doctor, **nurse responsible for general care, midwife**, pharmacist, veterinary surgeon and dental practitioner, Directive 2005/36/EC has introduced common minimum training standards and these professions are regulated in all Member States⁴⁷.

For nurses and midwives, the Directive stipulates the criteria for formal qualifications in terms of: programme length/number of hours; number of hours (nursing) or ratio (midwifery) of theory and clinical practice learning; where simulation may be permitted (midwifery); rules around recognition of prior learning (RPL) (nursing); selection, admission and progression; rules around entry to shortened programmes⁴⁸.

Annex V of the Directive lists the evidence of formal qualifications for each EU member state. Table 6 lists the evidence of formal qualifications for the UK.

Table 6: Evidence of formal qualifications for nurses responsible for general care and for midwives in the UK

Profession	Evidence
Nurse responsible for general care	A qualification approved by the Nursing and Midwifery Council or one of its predecessor bodies as attesting to the completion of training required for general nurses by Article 31 and the standard of proficiency as required for registration as a Registered Nurse – Adult in its register
Midwife	A qualification approved by the Nursing and Midwifery Council or its predecessor bodies as attesting to the completion of training as required for midwives by Article 40 and the standard of proficiency as required for registration as a Registered Midwife in its register

Content reproduced from: Directive 2005/36/EC of the European Parliament and the Council, of 7 September 2005 on the recognition of professional qualifications

Brexit

Since the UK withdrew from the EU on the 1st February 2020, and the transition period ended on 31st December 2020, the EU Directive no longer had legal force within the UK. Currently, the European Commission is reviewing and where necessary updating, the over 100 sector-specific stakeholder ‘preparedness notices’ it published during the Article 50 negotiations with the United Kingdom⁴⁹.

This section of the report presents the evidence identified through this review on the impact and effectiveness of the EU Directive on the following themes:

- Public protection and safety
- Effectiveness and quality of care for people who use services
- People with protected characteristics
- Experiences and perceptions of nurses, midwives and nursing associates and students
- Effectiveness, availability and quality of education programmes

It has been extremely challenging to identify evidence related specifically to impact and effectiveness within the context of the EU Directive.

- Some of the themes (e.g. public protection, experience) are broad and may be influenced by various factors, therefore impacts will be difficult to measure and attribute.
- There appears to be paucity of evidence in general that discusses the EU Directive, its requirements and their impact.

2.2 Public protection and safety

This evidence review found only a small number of studies that met the inclusion criteria for this theme. Overall, we would rate the quality of the evidence as moderate to high. The highest quality studies include 1) Kirwan's comparative descriptive study of 27 countries; the findings are based on findings from 83 HEIs (22 partially and 61 fully completed questionnaires) and 2) Tella's comparative study drawing on perceptions of 195 Finnish nursing students and 158 British students. Most of the evidence that met the inclusion criteria relates to nursing. Barr et al's study is of relevance to multiple healthcare professions; Power's discussion paper is of relevance to midwifery.

The first study examined for this review looked at **fitness to practice processes (FtP)** (specifically good health and good character) in pre-registration **nursing** programmes in Scotland involving a series of semi-structured qualitative interviews with 11 academic staff in Scottish Universities.⁵⁰ The findings showed the existence of diverse fitness to practice processes which drew on a shared set of principles. The study also found that the participating respondents were dealing with broadly similar issues (but does not state what these are). Where differences occurred, this was due to differing contexts, for example: student population, university structures and the influence of stakeholders. The literature review conducted for the study quoted a 2012 study by Boak et al that 'there is a dearth of substantive literature' on FtP; the literature review found two major areas of concern: a lack of clarity around concepts that underpin FtP and inadequate FtP processes.

A comparative descriptive study of 27 countries (Kirwan et al, 2019) looked at public protection through the lens of patient safety and reports that, although **patient safety** has been discussed in the literature since the 1990s, it covers many of the same principles by which healthcare professionals, including nurses, have practiced for much longer. In the past there has been much ambiguity around the definition of 'patient safety', however a definition was developed in 2008 by Emanuel et al:

“**A discipline in the health-care sector that applies safety science methods towards the goal of achieving a trustworthy system of health-care delivery. Patient safety is also an attribute of health-care systems; it minimizes the incidence and impact of, and maximizes recovery from, adverse events**” (Emanuel et al., 2008)⁵¹

The study goes on to suggest the same challenges for including patient safety in pre-registration education **nursing** programmes are found in other professions, particularly medicine. These challenges for medical education are acknowledged in medical literature and by regulatory bodies, however the study's authors (Kirwan et al) suggest that they are not equally acknowledged for nursing. In response, they suggest that:

“

“The EU provides further guidance on regulation of the profession of nursing in order to ensure a more standardized approach. EU guidelines are currently focused on the movement of nurses between European countries but do little to support the professionalization of nursing. Critically further guidance on the inclusion of patient safety in the core curriculum of nurses would help to ensure its place in the curriculum.”⁵²

”

Kirwan et al. citing a 2012 study by Ryan suggest optimism in advance of the then forthcoming update of Directive 2013/55/EU that tighter standards for education preparation of **nurses** would ensure a knowledgeable and competent workforce 'to address the care needs of those in need of healthcare across Europe'. Ryan proposed that, in terms of patient safety, the education standards and competences required 'remain vague'.⁵³

Ryan returned to the issue of pre-registration **nursing** students' provision of safe care in a 2020 discussion paper based on a small-scale review of literature on clinical placement. She described a knowledge gap in terms of what, and how, students are formally taught about fundamental issues such as **patient safety and infection control measures**. The paper, written in the context of the Covid pandemic, highlighted as a concern the lack of clarity over how frequently skills including handwashing and donning and disposing of PPE are covered in formal education settings. Ryan goes on to cite Cox et al (2014) who identified a separation 'in the learning expectations of education facilities and clinical practice'. They also found a knowledge and skills gap amongst new nurses when it came to maintaining adequate infection control. Citing a 2011 study by Riksaasen Hatlevik, Ryan draws attention to the ongoing theory-practice gap in theoretical and practice knowledge for pre-registration nursing students.⁵⁴

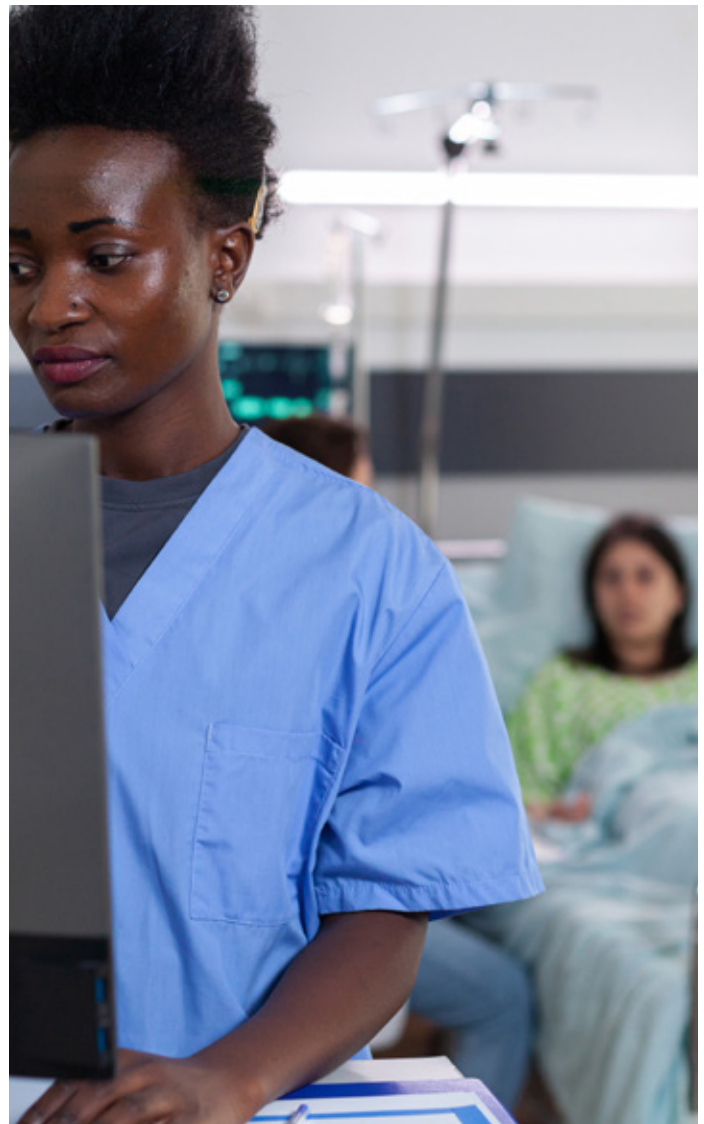
Ryan goes onto propose the benefits of **intentional rounding** (currently used in the UK and USA) as having demonstrable benefits for improving patient satisfaction and safety outcomes. It is a structured process where **nurses** on wards check on patients at regular, set intervals, usually hourly to identify and deal with issues such as pain and personal needs. Its benefits lie in reducing falls, pressure injuries and patient anxiety⁵⁵ 'and has additional benefits to staff including time management and knowledge of patient condition'. In summary Ryan suggests that, notwithstanding the current pandemic, there should be a more safety-focused approach to nursing curricula through incorporating such strategies as intentional rounding, which are not addressed in the EU Directive⁵⁶. Ryan goes onto suggest that intentional rounding is not currently specifically taught in nursing curricula, meaning that students may be ill-equipped to implement it in the practice setting because they lack the necessary theoretical practice skills for implementing such safety interventions.

The following small number of studies have addressed the issue of public protection and safety from different perspectives:

Findings published by Tella et al. in 2015 compared the perceptions of Finnish and British **nursing** students of patient safety in clinical settings. Via a cross-sectional comparative study involving 195 Finnish students and 158 English students they found that the Finnish students had significantly more critical perceptions of their learning about patient safety in clinical settings than did English students. Results were determined by data collected via the Patient Safety in Nursing Education Questionnaire. However, both sets of students desired more learning opportunities for patient safety ‘compared to the reality in clinical settings’. The authors promote a systems-based approach to ensure patient safety as well as learning systematically from errors in a supportive environment.⁵⁷

The literature on simulation (as discussed in the first interim report for this current study) clearly highlights the value of simulation learning within the context of patient safety as it allows the student to practice in a de-risked environment. As noted by Barr et al in the Centre for the Advancement of Interprofessional Education (CAIPE) Interprofessional Education Guidelines – quoting Boet, Bould, Burns et al., 2014; Thomas & Reeves 2015 – simulation is being widely adopted in the context of a recent heightened focus on patient safety including ‘opportunity for students comprising an interprofessional team to practice their respective interventions together around a manikin’.⁵⁸

Student experience is also of relevance within the context of patient safety. As discussed in section 2.4, below, various studies draw attention to the mental and emotional demands on nursing and **midwifery** students while undertaking clinical placements. As described by Power (2016) in reference to the preparedness of midwives, the effect of health worker wellbeing on service users’ experience of safe and satisfactory care translates into a public health issue, not just an issue with the professions. Therefore, this issue is also of pertinence to those students on clinical placement and directly involved in the provision of patient care because their mental health may impact on patient safety.⁵⁹



2.3 Effectiveness and quality of care for people who use services

This review has found a small number of studies on the effectiveness and quality of care for people who use services – in the context of pre-registration education and the EU Directive. The literature tends to focus on the perspective of the student nurse’s or midwife’s experience of providing care or service user involvement in student education. However, the literature that met the inclusion for this study tends to be of high quality, largely based on scoping studies/meta analysis.

There is an absence of literature on the link between quality of education and patient outcomes.

Lord Willis’ report ‘Raising the Bar’ noted the need for more longitudinal outcome measures:

“to ensure that there is more evidence and data available with which to measure the impact of education and training on the workforce, and therefore the impact that education has on patient care and service user satisfaction.”⁶⁰

Other studies look at service user experience from the perspective of their involvement in student learning and assessment^{61 62}. Whilst the literature suggests service users value opportunities to be involved in shaping pre-registration education, and that their involvement enriches education programmes, the evidence is tangential to the theme of the effectiveness and quality of care for people who use services. It is worth noting however the the NMC’s Education Framework currently includes various requirements on students, educators and assessors when working with service-users, for example in designing and delivering programmes. . The standards also include requirements for service users to be involved in student recruitment and selection and for services users to be involved in co-production.⁶³ Such strategies are not addressed in the EU Directive

Evidence cited by the NMC in response to consultation findings on the topic of ‘service user involvement’ in the Education framework tends to focus on co-production^{64 65 66} and service user involvement in education delivery^{67 68 69}. This review found two UK studies on the involvement of service-users in recruitment to **nursing** programmes.

- One in Value Based Recruitment (VBR) where service-users were used as co-researchers, however only nine service users were involved (feedback gathered via a focus group) in the recruitment of 640 adult student nurses. This small-scale study found that the involvement of service-users was beneficial for candidates, services-users and local health services⁷⁰.
- Another study using a phenomenological methodology also gathered feedback from service-users via focus groups on their involvement in recruitment to nursing studies. The findings were overall positive, with service-users reporting a sense of meaningful involvement⁷¹.

Again, this evidence is tangential but demonstrates that UK institutions are adopting good practice. The active participation of service users in the design and delivery of education and training goes beyond the requirement in the EU Directive for nurse training to take place in the community (as well as in hospitals and other health institutions). The same requirements are not stipulated for midwifery, but only that midwifery training takes place in hospitals and other health institutions.

Although there is a paucity of evidence on this specific point of effectiveness and quality of care, Henriksen et al make observations about the future direction of **nursing** practice that have relevance within this context. Whilst their study is based on the experience of nursing education in Nordic countries, the authors suggest the discussion has relevance to other EU nations.⁷²

The opinion paper highlights various restrictions imposed on nursing pre-registration education, relating to simulation learning and the number of clinical hours that **nurses** need to achieve and goes on to suggest that the EU regulations should be better suited to the way in which healthcare services are organised in different countries. Specifically, the paper recommends that students should have the opportunity for more experiences of providing care in patients' homes as patients are being discharged faster from hospitals and in a response to an increasing trend of community-based healthcare.⁷³

One 2016 academic study by Power found that from the service user's perspective a '**good midwife**' should possess various attributes including:

- theoretical knowledge
- clinical competency
- good interpersonal skills and
- moral/ethical values⁷⁴

These skills were highlighted as necessary to provide a service where women feel supported, empowered, and informed. However, Power goes on to point out that such demands on **midwives** only heighten the existing stresses of 'overworked, understaffed midwives'. This theme is discussed further in section 2.5.



2.4 People with different protected characteristics

This review found a very small amount of evidence related to this theme that met the inclusion criteria, such as McClelland's literature review of experiences of students with protected characteristics. This study, which focuses on a range of healthcare roles, was rated as high quality by this review. This section of the report also draws largely on grey literature such as responses to the NMC's consultation findings; grey literature has not been quality assessed.

In a 2015 UK study on the experience and outcomes of undergraduate **health professional** students with protected characteristics, McClelland et al highlighted the 2012 findings of Wray, Aspland, Taghzouit, Pace, & Harrison. These findings indicated that nurses with a specific **learning difficulty**, such as dyslexia, dyspraxia or dyscalculia were considered more likely to fail academically than students without a specific learning disability. McClelland et al point to other evidence which showed that students may hide their disability for fear of looking 'stupid', Sanderson-Mann, Wharrad, & McCandless (2012), and that student nurses with dyslexia had been found to experience difficulties while on clinical placement.⁷⁵

Various positive experiences of student **nurses** have been recorded. Again, McClelland et al citing a 2013 study by Evans describes students rejecting 'disability-focused language to elicit positive elements of dyslexia' and that there appears to have been a positive development surrounding disclosure by student nurses with a disability.⁷⁶ Good practice was identified by Wray (2012) who recommended the introduction of early screening of student nurses to combat instances of students with dyslexia being identified at the point of failing or exiting the programme.

In terms of **gender**, negative experiences focus on stereotyping and the limitations on male **nurses** through 'reduced clinical choice and opportunity during clinical practice placements', whilst positive experiences included the presence of male role models and positive outcomes for male student nurses.⁷⁷

In terms of **ethnicity**, the literature tends to focus more on negative experiences, than positive experiences. The greatest difficulty reported by ethnic minority student nurses was a language barrier, hampering progression or completion. Actions taken by institutions to combat barriers include introducing technical and non-technical methods of teaching, such as web-based learning. Other negative factors include:

- Discriminatory racial stereotyping and stigmatisation
- Lack of ethnic role models
- Being and feeling excluded from peer groups

Where students had positive experiences, this was due to supportive and culturally aware faculty staff and 'a culturally safe learning environment'.⁷⁸



The findings from the NMC's consultation report on the NMC programme of Change for Education, Nurse proficiencies and education framework found that the majority (81%) of respondents (organisations and individuals) thought that the objective of promoting equality and diversity had been met in the drafts.⁷⁹ Furthermore, the report on the consultation for the draft standards of proficiency and draft programme standards for Future Midwives also highlighted that 87% of midwives and 81% of organisations agree that the principles of equality, diversity and inclusion are appropriately embedded in the draft standards.⁸⁰ These findings show an improvement on 2017 levels, when the NMC consulted on the Education Framework: standards for education and training. The consultation responses showed that 70% of respondents agreed that the objective of 'promoting equality and diversity' in the draft education framework standards and requirements had been met. The report also found that in pre-engagement listening events held in 2015, stakeholders felt that quality of mentorship was a key area of concern with more needing to be done to encourage positive actions and 'develop standards which expect equality of opportunity, impartiality and objectivity in education'.⁸¹

The NMC's response to the 2019 Future Midwife standards consultation stated that the Council had in the final version of the standards made various aspects more prominent, such as in reference to equalities and human rights, providing non-discriminatory care and challenging discriminatory behaviour as well as acting as an advocate on behalf of the disadvantaged. The standards had also been revised to include the need to be able to identify and address signs of unconscious bias both in oneself and in others.⁸² Whilst these actions may serve to improve nursing and midwifery practice by tackling discriminatory behaviour, they are not reflected in pre-registration standards for nursing and midwifery programmes, nor in the content requirements of the EU Directive.

The 2019 HEE report 'NHS Staff and Learners' mental Wellbeing Commission' highlighted barriers for **older students** entering nursing undergraduate courses in the UK which traditionally attract many mature students. The report posits that these older students who will have had a previous career might be daunted at the prospect of entering higher education, particularly if the last formal education setting, they experienced was ten or 20 years ago.⁸³ The findings of the report suggest therefore that more can be done to encourage and support older people to enter the nursing and midwifery professions.

Other barriers highlighted in the NMC's own consultation findings include courses such as prescribing being determined by employer funding and support and there being a potential for discrimination; also, that **BME registrants** may find career progression more difficult.⁸⁴



Studies from other EU nations are scant, however one small-scale Swedish qualitative study⁸⁵ found that pre-registration students were inadequately prepared for many of the cultural encounters they experienced. The research was conducted with 10 final-year nursing students at a Swedish university (five from a Swedish background; five from an immigrant background) to examine nursing students' experience of and preparation for cross-cultural encounters. It found that:

- non-Swedish born students were more likely to emphasise life experiences as important preparation for nursing in a multi-cultural society.
- Swedish students placed greater emphasis on learning within the university in teaching them about how to interact with patients from different cultural backgrounds.

Some students felt that they did not know how to deal with negative attitudes, racism, and discrimination towards patients and, in some cases, towards themselves.

The study concludes that nursing education had largely failed to prepare students for dealing with such attitudes and recommends that greater emphasis should be placed on educating students about difficult situations arising from cultural discrimination. This suggests a need for pre-registration education to ensure that students have experience of dealing with and/or treating people from different backgrounds and cultures.

Whilst these findings are interesting from the perspective of how issues of equality and diversity can be tackled in university and clinical settings, they perhaps do not have direct relevance to the impact of the EU Directive. The issues are possibly more pertinent to how nurses and midwives are supported during their learning. That said, this may point to an issue with the content of nursing and midwifery courses although there is an expectation in the NMC standards that educators and assessors

“**receive relevant induction, ongoing support and access to education and training which includes training in equality and diversity**”⁸⁶

– and that –

“**Mentors, practice teachers, and teachers through their role-modelling of best practice play a vital role in promoting equality of opportunity by treating students with fairness, respect and understanding**”.⁸⁷

There are no such requirements on students, as set out in the standards for pre-registration nursing and midwifery programmes.

2.5 Experiences and perceptions of nurses, midwives and nursing associates and students

This theme is the most well-covered in the academic literature. The studies that met the inclusion criteria tend to include primary research with quality varying from small scale primary studies (identified below in the narrative) to larger scale cross-sectional research which this review has rated as moderate to high quality. The largest is Bach's qualitative study involving 401 midwifery students.

This review has found that the literature around student experience tends to focus on two main themes:

- negative aspects such as the stresses associated with the nursing and midwifery professions and the impact on students' mental health;
- views and perceptions on the relative success of particular learning interventions, such as simulation learning – usually studies are concerned with measuring student satisfaction and confidence levels.

However, this review did not identify any direct links in the evidence to the impact of the EU Directive; the findings are therefore more tangential.

Stress and clinical experience

The studies highlighting stressors for nursing and midwifery students are usually undertaken from the standpoint of understanding their clinical experiences – stressors are a typical finding from these studies. This is important because, as Shivers et al explain, various studies⁸⁸ have found a link between clinical experience influencing student attitudes towards that clinical setting. Indeed, the experience can be so profound that it will influence where the **student nurse** may be likely to work, once graduated⁸⁹. Furthermore, questions have been asked about the quality of the placement⁹⁰ and some students do not believe that all clinical learning environments are conducive to learning.⁹¹

As Health Education England (HEE) has reported, nursing students are exposed to stressful environments and experience high levels of stress due to factors stemming from the intensity of the programme and clinical performance. The HEE's report on mental wellbeing makes a crucial point – in that **nursing students** must complete a minimum number of clinical learning hours (2,300) and, unlike their peers, they will be required to undertake clinical placements at night, over weekends and bank holidays.⁹² In contrast, regulators for other healthcare professions (e.g., medical doctor, dentist, and physiotherapist) do not set a minimum number of clinical placement hours for pre-registration education programmes. (Further information on the requirements for other health professions is contained in the Benchmarking report accompanying this Evidence Review report.)

The impact of stress on healthcare students is well covered in the literature generally, but there are few UK-based studies that focus on nursing and midwifery education. One, based on a cross-sectional study, investigated the perceived stressors and coping behaviours of **student nurses** on a pre-registration programme of study, involving 87 pre-registration student nurses. The study confirmed that stress is a significant issue in nursing education and training with 53% of research participants having above average levels of stress; the most common causes being:

- Written assignments
- Lack of professional skills and training⁹³

Coldridge et al describe the impact on **student midwives** of experiencing traumatic events in the labour ward. The small-scale descriptive study – involving interviews with 11 second- and third-year students – found that the close relationships the students formed with their patients made them vulnerable to secondary traumatic stress. The authors recommended that midwifery education focus on the psychological complexities in the midwifery role.⁹⁴

Another UK-based study looked at the mental health of **midwifery students**. Qualitative interviews undertaken with 20 students at King's College London (KCL) found that the culture of midwifery clinical practice might not be emotionally supportive. The findings showed that students were having to learn to manage and control their emotions as part of their 'professional socialisation'. This was within the context of a policy direction in favour of individualised care and support for women's mental health – which students felt should also be reflected in the way that midwives work with one another.⁹⁵ The study pointed to a strong evidence base showing concern for students' mental health and healthcare students. The study also drew attention to a 2018 NHS England national staff survey which showed that midwives in England experience more 'stress' than paramedics and health visitors.⁹⁶

Indeed, the latest (2020) report on the 'Impact of COVID-19 on Students' survey reveals that of reasons for considering leaving their studies, both pre-registration nurses and midwives students rate 'being overwhelmed and stressed' as their second reason. The top reason for both groups is 'academic concerns'⁹⁷.

Various similar studies have been undertaken in the three EU comparator countries (Ireland, Spain, and Sweden):

An Irish study focusing on 13 final-year BSc **midwifery students** also reported the respondents experiencing stress. The respondents, who were half-way through their clinical internship, support the findings for the KCL study described above, in that one of the main barriers to learning was identified as an inability to cultivate working relationships with staff midwives and dismissive attitudes from staff midwives. The main cause of reported stress however was maintaining a work-life balance.⁹⁸

In Sweden, Willman, Bjuresäter and Nilsson conducted focus group interviews with 16 newly graduated nurses with 6 months' worth of clinical experience in an acute care hospital setting. The study found that new **nurses** did not feel sufficiently prepared or supported to meet the demands of complex patient situations in acute care clinical settings. Willman et al concluded that newly graduated registered nurses are not sufficiently supported for the level of responsibility and the demands placed on them in acute care and complex patient situations, a problem which may in some cases jeopardise patient safety.⁹⁹

Another Swedish study published in 2020 explored the experiences of 108 final term **midwifery** students in Sweden on their clinical internships. Students described the internship as an intense, high-pressured and often stressful experience, for which many did not feel adequately prepared. They reported that the need to achieve the final number of 50 assisted births led to feelings of competition towards fellow students. Students pointed out that the most preferable situation would be one in which preceptors were selected, trained, and supported in their role to supervise students, rather than students being supervised by any available preceptor.¹⁰⁰

Other recent Swedish research underscores the importance of supervision in developing clinical competence and confidence of **midwives** which sought to examine the factors that increased and decreased the confidence of midwifery students in clinical practice.¹⁰¹ Amongst the 401 responses received supervision was highlighted as most important factor for developing confidence in clinical practice. The value of a supportive supervisor was identified as pivotal to the development of competence as a midwife. Factors that undermined students' confidence were supervisors who appeared stressed or uninterested, along with perceived patronizing attitudes towards students and the fear of doing something wrong.

A Spanish study conducted in 2016¹⁰² explored **nursing students'** experience of stress during clinical practice. This cross-sectional, descriptive study was conducted at the two nursing colleges of the University of Oviedo, located in Asturias, Spain, and consisted of a survey of 450 Spanish nursing students. Participants ranged from all 4 years of study in the Bachelor of Nursing: 131 first-year students, 93 second-year students, 126 third-year students and 100 fourth-year students).

The study found that Spanish nursing students consider clinical practice to be 'rather stressful', with second-year students and female students experiencing highest levels of stress.

- Overall, female students found clinical practice to be more stressful than male students, both in general terms but also with respect to all individual stress factors included in the questionnaire.
- Second-years students found clinical placements more stressful than both first-year students (who may not yet be fully aware of the responsibilities of patient care) and fourth-year students (who have more experience and training).

A more recent (2021) Spanish study found that nursing students often approach their first clinical placement with a certain degree of anxiety (along with feelings of excitement and apprehension).¹⁰³ This descriptive qualitative study - through which a series of semi-structured interviews were conducted with 15 second-year nursing students in the weeks shortly before starting clinical placement – found that **nursing students** are generally excited at the prospect of clinical practice. However, participants also expressed anxiety about starting clinical practice, focusing on perceived personal weaknesses, such as insecurity and inexperience, which they believed may impact on their performance and learning experiences.

Learning interventions

Shivers et al also point to previous research which has identified that **nursing** students regard personalisation of the learning environment of primary importance, regardless of health setting, discipline, or country. However, student satisfaction varies – Shiver et al highlight a 2012 UK based study (Murphy et al) which compared satisfaction across hospital and community placement settings: district nursing was the best-liked placement. Shiver also quoted a 2011 study by Skaalvik et al. which found that students assessed nursing home placements negatively.¹⁰⁴

An Irish study looked at student experiences of guided group reflection as part of their four-year pre-registration **BSc Nursing (General), (Mental Health), (Intellectual Disability), and BSc Midwifery programme**. Students benefit from protected time for reflection via an entitlement for fourth year students during a 36-week clinical practice internship. The study found that students valued all aspects of guided group days, drawing attention to the benefits of being a member of a closed group with the same discipline and facilitator. A key success factor was the importance of facilitators in creating a safe and comfortable environment.¹⁰⁵

Another Irish study looked at the teaching and learning experiences via a survey of 206 first year **nursing** and **midwifery** students at a large urban university in Ireland. The students viewed their experience positively, identifying simulation-related learning modalities as enablers: namely clinical skills laboratory testing and online learning materials, as well as multiple choice questions¹⁰⁶.

A 2017 Swedish longitudinal study by Lendahls et al explored **midwifery** students' experiences of simulation and skills training.¹⁰⁷ Between 2011-2015, 61 students at advanced level were interviewed in 13 group interviews. The study found that most students felt simulation and skill training were necessary to become familiar with **hands-on skills** and that **repeating tasks in a safe environment** was important so that mistakes could be made without compromising patient safety. The study also highlighted the role of the lecturer in providing instruction and feedback and noted the importance of including reflection and critical thinking in the simulation and skills training to develop learning.

Consistency

Thompson et al found that student learning experience can vary enormously when it comes to placement and mentor quality – even between students on the same programme at the same university.¹⁰⁸

In his report 'Raising the Bar' Lord Willis also reported on the issue of consistency, finding that students would prefer greater standardisation. He comments that although HEIs are keen to interpret the NMC and HEE commissioning standards flexibly this should be balanced with consistency in output standards and threshold standards.¹⁰⁹

2.6 Effectiveness, availability, and quality of education programmes

This review has found a small number of studies on the impact of the EU Directive on the effectiveness, availability, and quality of education programmes. The study that comes closest is that by Henriksen et al who describe a number of limitations imposed by the Directive on nursing pre-registration education in Nordic countries.

Perhaps the most relevant of these considerations relates to the restrictions around the replacement of clinical learning hours with simulation because the EU Directive describes clinical learning as being ‘in direct contact with a healthy or sick individual’. Henriksen et al argue this statement prevents pedagogical development¹¹⁰. The concept of replacing clinical practice hours with simulation learning is discussed further in section 3.5.3.

The theory practice gap

A theme that is conceivably more implicit than explicit in the literature is the impact of a theory-practice gap on the effectiveness and quality of education programmes. This concept of a theory-practice gap is also important to consider in the context of the retention of newly graduated **nurses** as it creates a risk that they might leave the profession early if they are not fully competent or confident in the role. However, this evidence review has not identified in the literature any associations between the theory-gap and deficiencies in the requirements of the EU Directive.

Possibly the most relevant source about the theory-practice gap is Monaghan’s critical analysis of literature and theoretical perspectives. Monaghan draws on two UK-based studies, both of which suggest that **nurses** lack confidence upon registration but grow in the first 6 months: the first study was Brown and Edelman’s 2000 longitudinal correlation study within a university in the South of England. The second was Clark and Holmes’s 2007 cross-sectional qualitative exploratory study within three NHS Trust in the South of England. Monaghan suggests that changes made to nurse education are still not producing nurses who feel confident in acting autonomously possibly because of an education system that focuses too heavily on health promotion. Monaghan points to simulation as a method which has been

demonstrated to improve confidence, citing evidence from a 2011 study at a North of England university that simulation boosted students’ confidence and was a more enjoyable way of learning than in lectures. Other themes identified by Monaghan include clinical skills and preceptorships.¹¹¹ As these sources cited by Monaghan are over 10 years old, the findings should be approached with caution as they may no longer be relevant to the current context.

Clinical skills

Monaghan also drew on the findings of a 2002 qualitative longitudinal study at the University of Sheffield which found that **nursing** students felt clinical skills were not prioritised and required more focus and that course content was too repetitive.¹¹² However, the study was only small scale involving 19 students completing a Likert scale questionnaire and is now almost 20 years old, so its relevance is now questionable and this review therefore considers it low quality.

There is evidence from the EU comparator countries which points to a theory-practice gap existing elsewhere. Indeed, this is also highlighted in literature relating to the ratio of theory and practice learning (see section 3.2). A recent (2020) Swedish cross-sectional study by Willman et al found that newly qualified **nurses** often consider themselves to lack competences relating to

direct clinical practice. Eighty-five newly graduated registered nurses self-assessed their clinical competencies using the Professional Nurse Self-Assessment Scale of clinical core competencies II (ProffNurse SAS II). Participants believed that their most pressing training needs were in “reporting all incidents according to the patient safety system”; “medication, interaction and the side effects of medication”; “differential diagnoses when assessing patients’ health conditions”; “knowledge about the effect and treatment of medication”.¹¹³

Even where students consider themselves to have high levels of competence, research has shown that **nursing** students’ assessments of their own competencies may differ from competencies assessed through examination.¹¹⁴ In the study by Forsman et al, survey data was collected from 179 final-year nursing students at three Swedish universities. The study identified three clusters of students:

- Students in cluster 1 passed the National Clinical Final Examination (NCFE) but presented lower self-assessed competence (NPC) than the overall median values in the group.
- Students in cluster 2 also passed the NCFE and rated themselves as above median in all but one NPC competence area.
- Students in cluster 3 failed the NCFE but still rated themselves on the median level or higher in all but one of the Nurse Professional Competence scale (NPC) competence areas.

A cross-sectional study published in 2017 invited students on all **midwifery** programmes in Sweden to self-assess their confidence against four key areas of competence (antenatal, intrapartum, postpartum and new-born care) through a questionnaire. The study found that, while most midwifery students were confident in managing normal pregnancy, labour and birth, some students were more confident than others in handling obstetric emergency situations. Students at HEIs with a medical faculty were found to be more confident in dealing with obstetric emergency situations.¹¹⁵

Retaining skills

Monaghan noted that preceptorships are gaining recognition as a valuable way of integrating newly qualified **nurses** into their roles, however because the settings in which they take place have evolved so much the findings from extant studies might no longer be applicable. He suggests more research is needed.¹¹⁶

Other factors impacting on the effectiveness, availability and quality of education programmes include the competence of faculty, appropriateness of facilities and access to clinical placements, for example. However, these factors are external to the requirements of the EU Directive.

Another way of approaching the theory-practice gap question is in considering the extent to which students retain skills and knowledge after graduation. There is little evidence on the extent to which skills and knowledge are retained by students; studies tend to rely on self-reporting using a pre- and post-test design as a measure, with most pre-tests conducted immediately following the intervention¹¹⁷. This is particularly true of studies on the impact of simulation. The process of how simulation learning transfers to the clinical environment is unclear.^{118 119}

Although studies acknowledge there is increasing evidence on the effectiveness of simulation learning generally – in terms of effectiveness to improve knowledge, procedural skills, behaviour, teamwork and communication – they don’t tend to report the impact on clinical outcomes.¹²⁰

3. The EU minimum education and training requirements

This section sets out findings on each of the priority areas of interest for the NMC, namely:

- Selection, admission and progression
- Entry to shortened midwifery programmes
- Recognition of prior learning (RPL)
- Content requirements for programmes and clinical experience
- Practice learning hours and the use of simulation
- Programme length and number of academic theory and practice hours

By way of context, for each of the above, the requirements of the EU Directive are itemised, along with the respective requirements set out in the NMC's education standards.

The NMC provided evidence – including findings from an evaluation of the NMC's education pre-registration standards and findings from previous stakeholder consultations including Future Nurse Standards and Future Midwife Standards – to be considered as part of this review. The respective consultations sought views on the standards of proficiency for nurses and midwives as well as draft programme standards for the two professions. This review has drawn on the evidence pertaining to the programme standards for nursing and for midwifery. These sources have been classed as grey literature and have therefore not been quality assessed; the relevant findings from these sources are included as background, contextual information.

The 2021 stakeholder research carried out by Traverse captured fresh views; the findings of which are contained in a separate report which accompanies this report and the international benchmarking report.

Findings from academic literature are summarised separately in each of the following subsections.

3.1 Selection, admission, and progression

3.1.1 The requirements for pre-registration education

Table 7: EU Directive and NMC standards for selection, admission and progression

Requirements	Nursing	Midwifery
EU Directive	<p>Admission for nurses responsible for general care is contingent on either:</p> <ul style="list-style-type: none"> a) completion of general education of 12 years, as attested by a diploma, certificate or other evidence issued by the competent authorities or bodies in a Member State or a certificate attesting success in an examination of an equivalent level and giving access to universities or to higher education institutions of a level recognised as equivalent; or b). completion of general education of at least 10 years, as attested by a diploma, certificate or other evidence issued by the competent authorities or bodies in a Member State or a certificate attesting success in an examination of an equivalent level and giving access to a vocational school or vocational training programme for nursing. 	<p>Admission to training as a midwife shall be contingent upon one of the following conditions:</p> <ul style="list-style-type: none"> a) completion of at least 12 years of general school education or possession of a certificate attesting success in an examination, of an equivalent level, for admission to a midwifery school for route I; b) possession of evidence of formal qualifications as a nurse responsible for general care referred to in point 5.2.2 of Annex V for route II.

<p>NMC standard</p>	<p>The NMC sets a range of additional criteria for entry, admission, and progression, including that students:</p> <ul style="list-style-type: none"> ▪ are suitable for their intended field of nursing practice: adult, mental health, learning disabilities and children’s nursing ▪ demonstrate values in accordance with the Code ▪ have capability to learn behaviours in accordance with the Code ▪ have capability to develop numeracy skills required to meet programme outcomes ▪ can demonstrate proficiency in English language ▪ have capability in literacy to meet programme outcomes ▪ have capability for digital and technological literacy to meet programme outcomes. ▪ Amongst other requirements students’ health and character should also be sufficient to enable safe and effective practice.¹²¹ 	<p>The NMC sets a range of additional criteria for entry, admission and progression including that the AElS confirm that students:</p> <ul style="list-style-type: none"> ▪ enrolled on pre-registration midwifery programmes are appropriately compliant with Article 40(2) of Directive 2005/36/EC regarding general education length and/or nursing qualification as outlined in Annexe 1 of this document ▪ demonstrate an understanding of the role and scope of practice of the midwife ▪ demonstrate values in accordance with the Code ▪ have capability to learn behaviours in accordance with the Code ▪ have capability to develop numeracy skills required to meet programme outcomes ▪ can demonstrate proficiency in English language ▪ have capability in literacy to meet programme outcomes ▪ have capability to develop digital and technological literacy to meet programme outcomes ▪ Amongst other requirements students’ health and character should also be sufficient to enable safe and effective practice¹²²
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3.1.2 Evidence from the NMC

The NMC’s review of pre-registration standards (for both nurses and midwives) concluded that not only are there inconsistencies ‘and variation in how students are selected, taught and assessed between different university programmes, but the student learning experience can differ enormously in terms of placements and mentor quality even between those on the same programme, at the same university’.¹²³

The review identified broad agreement that the entry criteria provide an appropriate baseline of requirements – a view shared by the general public. However, consultees tended to agree that the entry criteria were too vague and should be tightened to provide greater consistency between AElS. Areas for which greater specificity was suggested include:

- **compassion** should be added (as there is a widespread feeling that this cannot be easily taught) and/or
- **motivation** (as there is concern that some students apply to education programmes for the wrong reasons).¹²⁴

The EU Directive does not specify such attributes, instead focusing solely on prior educational achievement.



Nursing

The 2017 consultation on the nurse proficiencies and - **specifically - the education framework**, asked respondents about entry requirements. The draft standards proposed that the new programme requirements would allow AEs and their practice partners to set entry criteria for literacy, numeracy, and digital literacy. Views were mixed, with 40% of the 1,170 respondents agreeing (either 'agree' or 'strongly agree') and 46% disagreeing (either 'disagree' or 'strongly disagree'). Those who provided follow-up comments stated a need for standardisation to combat inconsistency across the country; those who agreed with the proposal spoke about the benefits of being able to respond to local need.¹²⁵ This point echoes the findings of Lord Willis' report 'Raising the Bar', in which students call for more standardisation across HEIs.¹²⁶

The consultation also asked about progression: the draft pre-registration nursing programme requirements allow education institutions to decide what is required from a student at each progression point of their programme. Half of all respondents (51%) said they agreed with this approach (57% of organisations and 49% of Individuals).¹²⁷



Midwifery

There is limited, recent evidence on how maternity stakeholders view entry requirements for pre-registration education. The consultation on the Future Midwife standards specifically in response to questions about the programme standards – stated that respondents 'have issues around entry requirements for midwifery training' with some suggesting standards of literacy, numeracy or general education should be higher. The consultation report also states that others feel experience

and personal qualities (such as resilience) should be considered. It is not clear from the report whether a specific question was asked about entry criteria. As with nursing, the EU Directive does not specify such attributes, instead focusing solely on prior educational achievement.¹²⁸

3.1.3 Findings from the literature

The HEE's report on the NHS Staff and Learners' Mental Wellbeing Commission found a growing trend that applicants to university undergraduate courses in medicine, dental, health sciences, nursing and the allied health professions should have explored a career in healthcare prior to submitting their application. This would be achieved through some form of work experience.

The Commission found that this requirement can prove a barrier for some 'schools' and applicants who do not have the necessary connections in the NHS and care sector to acquire this experience.¹²⁹

Willis cited further barriers to progression opportunities experienced by registered nurses and care assistants; most notably in finding the time to attend training courses. Willis concluded that HEE must:

“encourage employers to support care assistants and registered nurses to remain within their employment by providing them with opportunities to advance their careers and to engage in life-long learning.”¹³⁰

3.2 Entry to shortened programmes

3.2.1 The requirements of the EU Directive

Table 8: EU Directive and NMC standards for entry to shortened midwifery programmes

Requirements	Nursing	Midwifery
EU Directive	See 3.4.1 'Recognition of Prior Learning'	<ul style="list-style-type: none"> ▪ Full time education and training of at least two years consisting of 3,600 hours, contingent upon possession of evidence of formal qualifications as a nurse responsible for general care, or ▪ Full-time education and training as a midwife of at least 18 months consisting of at least 3,000 hours, contingent upon possession of evidence of formal qualifications as a nurse responsible for general care and followed by a year's professional practice
NMC standards	See 3.4.1 'Recognition of Prior Learning'	<p>Prospective students who have previously completed an adult nursing programme are permitted to complete a shortened programme – typically 18 to 24 months.</p> <p>NMC registered nurses entering a shortened pre-registration midwifery programmes must be a Registered nurse: first level (adult) and the programme complies with Article 40(1)(b) of Directive 2005/36/EC outlined in Annexe 1 of this document ¹³¹</p>

3.2.2 Evidence from the NMC

Recent consultations conducted by the NMC have not asked questions about shortened programmes.

3.2.3 Findings from the literature

There is a paucity of evidence that met the inclusion criteria for this review on the impact or effectiveness of shortened programmes for nursing and midwifery. This review has only identified one source that discusses shortened programmes for midwifery: 2017 exploratory descriptive study by Darra and Clarke involved a literature review and online survey of 62 midwifery lecturers.

According to Darra and Clarke, who reference Fish and Gillman, the shortened programme was, at the time,

“

“offered in 21 institutions in England, one in Wales and as a conversion course in Northern Ireland, with none available in Scotland” ^{132 133}.

”

The authors go onto confirm the lack of evidence on shortened courses, with the RCM stating in 2003, and in 2011, the benefits between the long and the shortened programmes were being debated,

“

“but found that there was no national study that explored the arguments for or against the shortened programme”.¹³⁴

”

Darra and Clarke, again citing the 2015 Fish and Gillman study, suggest that London-based LMEs, academic learners, HoMs and student midwives believed that student nurses brought additional skills and experience that enhance the workforce. However, the authors supported an increase to a 24-month masters programme – specifically if it included extra skill acquisition in high-dependency care and in new-born and infant physical examination. Darra and Clarke suggest their literature reveals little difference between the experiences of students on the long or shortened programme.

The 62 responses to the online survey suggest that applicants had a very good understanding of midwifery before entering the programme, 71% of respondents felt that applicants to the shortened programme performed well at interview and 72% agreed that nursing students on shortened courses bring with them skills that are vital for midwifery. Respondents were generally negative about students’ writing and numerical skills, however. Decision-making skills were also regarded as lacking – with only 28% of respondents feeling that students were able to undertake decision-making and full client-choice aspects of the role. Despite this, 95% felt that the students were quickly able to settle into the NHS culture; finally, views were almost evenly split when asked whether attrition from the shorter programme was lower than on the long programme.¹³⁵

This evidence review has not been able to identify the original Fish and Gillman source via database searches (the reference in the endnotes to this report is taken from Darra and Clarke’s reference list).

3.3 Recognition of prior learning (RPL)

3.3.1 The requirements of the EU Directive

Table 9: EU Directive and NMC standards for recognition for prior learning (RPL)

Requirements	Nursing	Midwifery
EU Directive	The EU Directive does not specify the percentage of a nursing programme that can be accredited as APL.	RPL is not permitted for pre-registration midwifery programmes However qualified nurses are permitted to enter shortened courses (see section 3.5) through recognition of formal qualification/s
NMC standard	<p>AEIs must:</p> <ul style="list-style-type: none"> ▪ permit recognition of prior learning that is capable of being mapped to the standards of proficiency for registered nurses and programme outcomes, up to a maximum of 50 percent of the programme and comply with Article 31(3) of Directive 2005/36/EC (included in Annexe 1 of this document). ▪ NMC registered nurses permit RPL that is capable of being mapped to the standards of proficiency for registered nurses and programme outcomes that may be more than 50 percent of the programme¹³⁶ 	As above.

The 50% cap on RPL for nursing programmes was introduced in 2010 when the NMC updated the standards for Pre-Registration Nursing Education. Prior to this the permitted portion of RPL was one third. According to a report produced for the NMC in 2007, one of the arguments for permitting a larger proportion was this it could create more flexibility and widen participation, encourage more mature applicants and those from diverse backgrounds.^{137 138}

“create more flexibility and widen participation”,

3.3.2 Evidence from the NMC



In the consultation on the **nurse proficiencies and - specifically - the education framework (2017)**, the majority (75%) of the 937 respondents agreed that the NMC should continue to set a maximum limit for recognition of prior learning. Of those who made further comments (400) around half suggested a maximum of 50% of the programme could be RPD'd provided all the requirements are met in full.^{139 140}

As at 2016-17, the majority of AEIs had received RPL applications: the annual self-assessment revealed that of the 77 AEIs only 14 had not received such requests. 28 AEIs only indicated the numbers of successful RPL claims, without providing the total number of students recruited. The number of claims ranged from 1 to 107: the average number was 25 claims.

For the remaining 35 AEIs, the proportion of successful RPL claims ranges from 0.5% to 18% with an average of 6%.

The wide range in the number of RPL claims is in part attribute to the number of postgraduate programmes for which RPL is used to gain entry.¹⁴¹



The EU Directive permits shortened programmes which are only accessible to nurses via recognition of formal qualification/s – those who have completed an adult nurse programme. The subject of RLP has therefore not been consulted on.

3.4.3 Findings from the literature

This review found a small number of studies prior to 2015 that discuss RPL, however none were identified that meet the inclusion criteria.



3.4 Content requirements for programmes and clinical experience

3.4.1 The requirements of the EU Directive

The **NMC Programme standards**: standards for pre-registration nursing programmes and the **standards for pre-registration midwifery programmes** do not set specific areas of content, but stipulate that programmes comply with, and are mapped to, the content set out in EU Directive 2005/36/EC.

3.4.2 Evidence from the NMC

According to the evaluation of the NMC's pre-registration standards, stakeholders tend to agree that the SPME and SPNE accurately represent the core requirements for newly registered professionals. The majority of the public also believe that nurses (88%) and midwives (89%) are fit for practice if they can meet the outcomes at the point of registration.

However, the evaluation report stated that not all nursing and midwifery students can demonstrate all the outcomes in the standards at the point of registration. Reasons for this variation in competence do not appear to be attributed to any issue with the content of nursing and midwifery programmes. Factors identified include: inconsistent entry criteria; varying availability of placements; varying levels of responsibility/opportunity to practise clinical skills; varying availability of mentors and quality of mentorship; practice experience not always being supported by 'timely and relevant theory'.¹⁴²

Specific examples of which skills are thought to be lacking include:

- giving injections and setting up IV drips due to insufficient practical exposure.
- practice in managing and administering drugs because students do not always have the right numeracy skills to make safe calculations¹⁴³

The two sub-sections that follow summarise stakeholder views captured on the drafts of the latest standards of proficiency for nurses and for midwives. The summaries are included as context because education programmes – which until 31st December 2020 needed to comply with the requirements of the EU Directive – should enable students to meet the standards of proficiency upon successful completion of their training and education, in order to enter the respective register.

Currently, the proficiencies go beyond the requirements in the EU Directive. This is because of the 'outcome focused' nature of the proficiencies, and the requirements in the Directive being clinically focused and 'quite prescriptive'.



The consultation on the **nurse proficiencies and education framework** found that the content of the draft standards appeared to be about right. The 1,017 respondents were asked if there were any aspects of nursing practice that they would have expected to see in the draft standards: only a fifth stated 'yes'.

Of these respondents, 250 provided additional comments on aspects they felt were missing. The main themes included:

- Wide ranging topics such as environmental health
- More on communication with patients and / or families
- More on mental health generally
- Greater focus on midwifery
- Compassion / compassionate care
- More on safeguarding
- More basic nursing care
- More on holistic care¹⁴⁴

Just under a quarter (25%) of the 1,322 respondents felt that any core skills had been omitted. According to the consultation report, the comments were ‘relatively fragmented’ and included: mental health skills, then skills related to children / CYP and then skills related to learning disabilities. Conversation management or specific conversations were cited by almost 50 respondents.¹⁴⁵

29% of all 1,012 respondents to a question on whether any skills were unnecessary answered ‘yes’. These unnecessary skills included: chest auscultation, cannulation / aspects of cannulation, venepuncture, and ECG / cardiac monitoring. Followed by catheterisation / aspects of catheterisation, IV procedures and venous blood gasses.¹⁴⁶

The report also found that views were mixed when it came to whether the draft standards will achieve an increased emphasis on leadership skills for the nurse at the point of entry to the register. This is because the content is either too ambitious or that leadership is more appropriate for a preceptorship or post-qualification.¹⁴⁷

Health Education England (HEE) report **NHS Staff and Learners’ Mental Wellbeing Commission**’ suggests that although healthcare training has historically placed great emphasis on technical knowledge and clinical skills, there is limited training in patient compassion. The report goes on to suggest that this could be remedied via ‘awareness work’; compassion and empathy can be cultivated towards patients and self. The report acknowledges that there is

“not a substantial evidence base that training for empathy may increase insight”.

The report suggests a solution of building in personal support into healthcare curricula.¹⁴⁸



The majority of respondents to the Future Midwife consultation (61%) suggested that there were knowledge or skills missing in the draft standards. A small number of suggestions were made:

- Mental health (6)
- Physical examination of the new-born infant (5)
- Perinatal mental health (3)
- Care needs for trafficked women, asylum seekers, refugees, and modern slavery (3)
- Communication skills (2)
- Continuity of care (2)
- Basic physiological midwifery care (2)
- Other care models in current use (2)

Just under half (48%) agreed that the draft standards contained knowledge or skills that were not needed, mainly because they were considered more appropriate for post-registration practice. These knowledge or skills included:

- insertion of oral, nasal, and gastric tubes (8 comments)
- managing ECGs (7 comments)
- the physical examination of the new-born infant (3 comments)¹⁴⁹

In response, the NMC retained the physical examination of the new-born infant and decided that the new standards should include both the theoretical and practical components of the examination

“that midwives should perform the examination on healthy term new-born infants and this should be made clear in the standards; that the differentiation between the initial assessment of the new-born infant and the enhanced physical examination of the new-born infant should be more clearly articulated; and that the list of skills should be replaced with a more high level approach”.¹⁵⁰

The final standards were also strengthened in a number of areas such as the:

- role that midwifery support workers and others can play in the delivery of postnatal care
- need to continue providing postnatal care to a woman when her baby is taken into the care of social services
- need to provide emergency safeguarding in situations such as where the woman has been the victim of violence or abuse¹⁵¹

The Directive is prescriptive about the clinical skills and knowledge that midwives must acquire.

However, the Directive is less prescriptive about non-clinical knowledge. For example, some proficiencies – such as communication and working across diverse settings – do not map because these aspects are not explicit in the Directive.¹⁵²

3.4.3 Findings from the literature



Nursing

In 2020, a mapping exercise conducted on behalf of the European Commission identified a number of potential gaps in the Directive regarding generally acknowledged advancements in the countries covered by the study (namely, all EU Members States, EFTA States and the UK). The gaps included adding:

- **Person-centered care theories** – including nursing care in community settings
- **Inter-/multidisciplinary theories** – no updates needed
- **Management theories applied to nursing** – adding the ability to develop an effective leadership approach and decision-making skills
- **Evidence-based practice** – adding evidence-based nursing practice and research
- **Technical progress** – adding ‘e-health’ and a comprehensive knowledge of the technical innovations related to healthcare and nursing methods¹⁵³

An earlier evaluation of the Bologna Process and basic nursing education in 21 European Countries found that nursing science was selected by respondents as the most important scientific area in the curriculum.¹⁵⁴

Whilst this review has identified a small number of studies which conclude that enhanced and consistent bioscience content is needed in UK pre-registration nursing curricula, direct links to the impact of the EU Directive are not made^{155 156 157}.



Midwifery

In 2016 the European Commission conducted an evaluation of the Professional Qualifications Directive 2005/36/EC for Midwifery. The evaluation found that a majority of the respondents (national authorities) felt that ‘the minimum training requirements for midwives need to be updated and to be more focused on competencies and skills’. The evaluation report suggested that the content of the annex needs to be revised; subjects suggested by competent authorities include: communication and social skills, research, evidence-based practice, midwifery led care, normal birth and labour, breastfeeding, medicine, management and informed consent/choice. The report goes on to propose that the minimal list of competencies contained in the annex should be linked to the training requirements – it should be an output-based programme, not only input.¹⁵⁸

In a mapping exercise conducted in 2018, the Vermeulen et al concluded that all EU member countries had implemented the requirements of Annex V in their national regulation of midwifery education, but that active participation in

Consequently, the EMA proposed updating the content to reflect advancements in clinical training such as the use of simulation training for the development of competencies in the management of perineal trauma and vaginal breech births, as well as ‘provision of respectful maternity care’. A working group concluded that the language of Annex V needed updating to reflect the ICM definition of the midwife and the Framework for Quality Maternal and Newborn Health from the Lancet series on Midwifery.¹⁵⁹



“vaginal breech births and assessment and management of perineal trauma were difficult competencies to acquire in practice”.

3.5 Practice learning hours and the use of simulation

3.5.1 The requirements for pre-registration education

Table 10: EU Directive and NMC standards for practice learning and the use of simulation

Requirements	Nursing	Midwifery
EU Directive	<p>Practice hours shall constitute at least 2,300 hours (of a three-year 4,600-hour programme) the duration of the theoretical training representing at least one third and the duration of the clinical training at least one half of the minimum duration of the training.</p> <p>Simulation is not mentioned.</p>	<p>Practice hours shall constitute 50% of a three-year programme.</p> <p>Where active participation is not possible because of a lack of breech deliveries, practice may be in a simulated situation.</p> <p>Performance of episiotomy and initiation into suturing... may be in a simulated situation if absolutely necessary.</p>
NMC standard	<p>AEIs must:</p> <ul style="list-style-type: none"> ▪ provide practice learning opportunities that allow students to develop and meet the standards of proficiency for registered nurses ▪ ensure that students experience the variety of practice expected of registered nurses to meet the holistic needs of people of all ages ▪ provide practice learning opportunities that allow students to meet the communication and relationship management skills and nursing procedures, as set out in standards of proficiency for registered nurses ▪ ensure technology enhanced and simulation-based learning opportunities are used effectively and proportionately to support learning and assessment and pre-registration nursing programmes leading to registration in the adult field of practice comply with Article 31(5) of Directive 2005/36/EC (included in Annexe 1 of this document) ▪ take account of students' individual needs and personal circumstances when allocating their practice learning including making reasonable adjustments for students with disabilities ▪ ensure students experience the range of hours expected of registered nurses, and ▪ ensure that students are supernumerary. 	<p>AEIs must:</p> <ul style="list-style-type: none"> ▪ provide practice learning opportunities that enable students to develop and meet the NMC standards of proficiency for midwives ▪ ensure students experience the role and scope of the midwife enabling them to provide holistic care to women, new-born infants, partners, and families ▪ provide students with learning opportunities to enable them to achieve the proficiencies related to interdisciplinary and multiagency team working ▪ provide students with learning opportunities to enable them to achieve the proficiencies related to continuity of midwifery carer across the whole continuum of care for all women and new-born infants ▪ provide students with learning opportunities to experience midwifery care for a diverse population across a range of settings, including midwifery led services ▪ provide learning opportunities that enable students to develop the required knowledge, skills and behaviours needed when caring for women and new-born infants when complication and additional care needs arise, including as they relate to physical, psychological, social, cultural, and spiritual factors ▪ take account of students' individual needs and personal circumstances when allocating their practice learning opportunities, including making reasonable adjustments for students with disabilities ▪ ensure students experience the range of hours expected of practising midwives, and ▪ ensure students are supernumerary.

3.5.2 Evidence from the NMC

A 2014 evaluation of the NMC's **pre-registration standards and guidance**, highlighted the availability of practice placements as a concern stemming from ward closures, budget restraints and increasing numbers of students. The result is that some nursing students struggle to find appropriate placements with some AEs being increasingly reliant on special schools and residential care homes to provide placements.

The evaluation report went on to highlight the impact of a shortage of nursing placements:

- multiple students undertaking placements in the same place, limiting the amount of time mentors can spend with each student
- students being allocated placements at unsuitable times

For midwifery, the issue was regarded as less problematic although there were some concerns around a lack of birth centre placements resulting in midwives not always having sufficient exposure to normal births. A lack of community placements also meant that some students were not sufficiently exposed to home births.¹⁶⁰

In such circumstances, simulation is sometimes used for providing opportunities to practice clinical skills. A survey conducted by the NMC in 2016 found that, of 72 approved AEs, for pre-registration nursing programmes, 52% used simulated practice for some practice learning, while 43% achieved all practice learning within the clinical environment. Only three AEs used simulation for practice learning in midwifery programmes; hours varied between 7 hours and 128 hours for the three-year midwifery programme.¹⁶¹ Given the impact of the current pandemic, the proportion of AEs using simulated practice is likely to have grown recently in response. In January 2021, the NMC introduced recovery and emergency programme standards which “enable students to practise and learn

through simulated practice learning where conventional clinical practice isn't available or isn't possible.” Up to a maximum of 300 hours across a programme's duration¹⁶².

In recent consultations, the NMC has asked stakeholders about the use of simulation in both nursing and midwifery pre-registration education programmes.





Nursing

In the NMC's 2017 consultation on the requirements for pre-registration nursing education programmes, of 1,168 respondents¹⁶³, 40% agreed (either 'strongly agree' or 'agree') that practice learning provided through simulation can be increased (but should not exceed the number of hours spent in actual practice placement settings). 39% disagree with this proposition, 27% strongly. Of those who strongly disagreed, half suggested that the current cap of 300 hours should be retained.¹⁶⁴

When asked whether competencies or certain procedural skills should be achieved in a simulated practice setting before being assessed in practice settings, 76% of all 1,009 respondents to the question agreed. However, only 34% of respondents suggested that there were any communication and relationship management skills or nursing procedures that could fully be achieved in simulation.¹⁶⁵

Based on these results, the consultation report concluded there is widespread support for competence of certain nursing procedural skills being achieved in simulated practice settings before being assessed in actual practice settings. But, that simulation cannot and should not entirely replace practice settings for learning or assessment of skills.¹⁶⁶

When asked whether there are any nursing procedures that cannot be fully achieved in simulated practice settings – 59% of respondents said 'yes'. More than 500 respondents added comments, most commonly suggesting that simulation cannot substitute for real interaction with a patient and that all must be signed off in practice. This reflects the content of the EU Directive, which describes clinical training as being in "direct contact with a healthy or sick individual and/or community". Sub-themes related to the benefits of simulation as well as weaknesses and limitations of simulation.¹⁶⁷



Midwifery

In the 2019 Future Midwife consultation on the programme standards, respondents were asked whether they agree or disagree that the midwifery programme provides an equal balance of theory and practice learning. 80% of midwives agreed, and 71% of organisations (of 407 responses from midwives and 49 from organisations). Of those who agreed, some expressed concerns about the definition of 'simulation' and whether it counts as 'theory' or 'practice'. Whilst respondents acknowledged the value of simulation for infrequently occurring scenarios, they felt that simulation should not replace practice learning.¹⁶⁸ This demonstrated support for the EU Directive requirements, which permit simulation in place of practice learning in only two situations, and only where absolutely necessary.

The final version of the standards states that programme providers must ensure 'technology-enhanced and simulated learning opportunities are used effectively and proportionately to support learning and assessment, including where clinical circumstances occur infrequently and a proficiency is required'. Additionally, a definition of what constitutes 'simulation' and 'simulated learning' was also included within the glossary.¹⁶⁹

3.5.3 Findings from the literature

Whilst simulation in healthcare education is widely used in the United States, it is also becoming more prevalent in New Zealand and Australia – particularly in midwifery – due to various factors such as declining inpatient populations, rarity of some emergency clinical situations, safety concerns and advances in learning theory.¹⁷⁰

In the UK there is comparatively limited evidence on the current use of simulation in nursing and midwifery education. Most studies of relevance to this review are published in the USA, however studies specifically on the substitution of simulation education for clinical practice are not widespread. This studies identified for this review – and which met the inclusion criteria – focus on nursing.

“The published literature reporting primary studies of the substitution of simulation-based education for clinical placement in healthcare disciplines is sparse”¹⁷¹

A 2014 simulation study by the US National Council of State Boards of Nursing (NCSBN) is the most widely cited study of its kind. Although the 2014 publication date of the findings falls outside of the inclusion criteria for this study, it is a landmark source and so has been included in this review as an exception.

As noted in the first interim report for this current piece of work for the NMC, the NSBSN study was a precursor to the introduction of a set of national guidelines for using simulation in nursing pre-registration education. The study was instigated partly in response to a lack of robust evidence on the efficacy of simulation in nursing education, although the NCSBN concluded that the results of previous research studies “seem generally favourable”.

One of the main research questions asked whether substituting clinical hours with 25% and 50% simulation impacted educational outcomes. Towards the end of the programme, clinical preceptors and instructors rated the clinical competency of the 666 study participants using the New Graduate Nursing Performance Survey (NGNPS). They researched found less than a one-point difference among the mean scores across the three groups: the 25% simulation group, the 50% simulation group, and a control group. Similarly, there were no statistically significant differences between scores for ‘Critical Thinking’, nor for ‘Global Assessment of Clinical Competence and Readiness for Practice’.¹⁷²

The second part of the study investigated the long-term impact of substituting simulation for traditional clinical experiences. The study participants were sent a survey at 6 weeks, 3 months, and 6 months after the start of their first employment as a registered nurse. The survey covered the same evaluation tools as Part 1 (i.e., NGNPS, Critical Thinking and Global Assessment of Clinical Competence and Readiness for Practice). Additional questions assessed how well the students had acclimatised to the role. The results revealed that all groups scored high on nursing knowledge assessments throughout the program and on the end-of program comprehensive examination. NCLEX passing rates were comparable among the groups and manager ratings of clinical competence, critical thinking, and overall readiness for practice were consistent with Part I findings – i.e., there were no differences in outcomes among the three groups.¹⁷³

A major conclusion of the trial was that clinical hours can be effectively replaced by simulation. As a result, the NCSBN developed Simulation Guidelines for Prelicensure Nursing Education Programmes, which are being adopted by some state boards.¹⁷⁴

However, no recommendation was made regarding the number of hours that could be substituted for simulation, mainly because there is no evidence for programmes with fewer than 600 hrs and because the quality of the experience is deemed to be the most important aspect (rather than the number of hours). Bogossian found that a range of factors is highlighted by the NCSBN which should inform decisions about the appropriate number of simulation hours that can substitute for clinical practice. These factors are: overall numbers of programme hours; pass rates of students; clinical site availability; turnover of faculty/programme director and complaints from students.¹⁷⁵

According to Bowling (2018) of the 50 US Boards of Nursing (BON), 24 allow simulation to replace a proportion of clinical hours; only 15 give guidance for the amount of simulation that is permitted to replace clinical hours.¹⁷⁶ In terms of the regulations for the use of simulation, 30 BONs have specific regulations, however only 23 of these specify the type of experiences that are acceptable. The regulations of 25 BONs allow the replacement of a proportion of clinical hours with simulation: 13 allowing up to 50% of clinical time to be replaced; two allowing 30% and, seven allowing 25%.¹⁷⁷

A 2019 national survey of prelicensure programmes reported a huge variation in total clinical hours, ranging from 432 to 960. Seventy per cent of these programmes allowed some of these hours to be substituted for simulation experiences. Interestingly, 61% of respondents identified a need for simulation to be increased within their programmes.¹⁷⁸

This evidence review did not find any evidence that met the inclusion criteria on the substitution of simulation learning for clinical practice hours in midwifery pre-registration education and training.



The effectiveness of different types of simulation for different learning outcomes or contexts

Research by Aebersold et al published in 2018 found a number of benefits of simulation learning in different contexts in undergraduate nursing education in the USA.¹⁷⁹ Aebersold quoted the following studies. Four of the five do not meet the inclusion criteria for this review (i.e. they were conducted before 2015) but they are referenced here because Aebersold's is one the few studies that identify the benefits of simulation learning in different contexts. They all relate to nursing.

- The use of standardised or simulated patients in the **mental health** undergraduate curriculum for nurses was found to reduce student anxiety and develop interview and therapeutic communication skills (Doolen et al, 2014)
- Following a simulated **end of life** scenario with an elderly patient in palliative care, nursing students stated that despite experiencing feelings of sadness and helplessness they learnt about a 'good death' and had gained new knowledge which they 'hoped they would remember' (Fabro et al, 2014)
- In a further **end of life** scenario, the 336 nursing students who took part demonstrated a significant increase in knowledge, self-confidence, and perceived communication skills (Fluharty et al, 2012)
- Senior nursing students participating in a community-wide mass-casualty event experienced increased understanding of the disaster process, role clarity and teamwork (Austin et al 2014)
- In a **multi-professional** simulation where students had to disclose to an avatar that a medication error had occurred, the 21 students from nursing, pharmacy and medicine rated the experience as realistic, effective 'and a convenient platform for learning' (Caylor et al. 2015)

This evidence review has found limited, robust evidence on which modalities are most effective for developing specific learning outcomes in nursing and midwifery education, due to the small sample sizes of studies or because the findings of the studies were inconclusive.

- However, it appears that low fidelity modalities such as role-play and workshops demonstrate good outcomes for the development of non-technical skills such as communication and decision-making.^{180 181}
- Other low fidelity modalities such as the use of mannequins are effective for the development of confidence and teamwork.¹⁸²
- Virtual simulators show promise in the development of knowledge and in technical skills acquisition and preparedness for dealing with stressful situations. The major advantage of some VR technology is in facilitating flexible learning at the student's convenience by allowing virtually unlimited training time.^{183 184 185}
- High-fidelity simulations have been shown to improve students' knowledge and confidence and psychomotor skills.^{186 187}
- Evidence suggests that hybrid approaches, which combine modalities, and numerous skills may have a greater effect on learning.¹⁸⁸

Indeed, in their meta-analysis, Chernikova et al suggest that combining different simulation modalities – such a role play, practice on a model and virtual reality – has a **great effect on learning**. The study also found that the biggest effect sizes were obtained for:

- technical performance
- problem-solving
- diagnosing skills

The conclusions suggest that the greatest gains from simulation are obtained when different "mental modes and abilities" are combined than in simulations that involve fewer skills.¹⁸⁹

Benefits and limitation of substituting practice hours for simulation

According to Sullivan et al

“only one study has quantitatively documented what occurs during a clinical experience compared with simulation”.¹⁹⁰

This one study - by O'Neill et al – published in 2013, found that more meaningful work occurred in the simulation setting compared with the traditional clinical setting because there is less ‘down time’ during simulation and it can be more tightly planned, structured, and managed.

In fact, a number of studies have highlighted the positive, and sometimes superior, impact on skill acquisition of simulation versus experience in the clinical setting. For example, Sullivan et al in their comparison of traditional clinical and simulation settings found the following benefits of simulation:

- There were more physical assessments, skill activities and teaching in simulation than in clinical settings
- Only one of the three participating sites recorded any downtime in simulation (9 minutes waiting to resolve operations, computer, or mannequin issues) compared with 9.7% of all activities in the clinical setting being described as ‘downtime’
- Students complete more patient care activities at higher levels of funding during simulation in 1/5 of the time than in the clinical setting¹⁹¹.

Indeed, providing simulation experiences for students is becoming more common in nursing education programmes as students can perform patient care on mannequins. This eliminates the risk for patient harm and allows for immediate feedback after students complete scenarios. Although learning in a simulated environment does not remove all negative experiences – such as failure and embarrassment – it can reduce students’ anxiety.¹⁹²

Although Bogossian et al found limited ‘gold standard’ evidence for simulation as a substitute for clinical practice, they concluded that evidence from the range of studies they looked at¹⁹³ (on nursing physiotherapy and medicine) suggests

“that there is a statistically equivalent level of performance when simulation-based education is substituted for clinical placement hours in prelicensure programmes”.

They did not identify any negative evidence on the substitution of clinical placement hours for simulation.¹⁹⁴

Furthermore, the use of more simulation or simple role play was recommended by McMullen et al in their evaluation of teaching through audit against NMC standards and final management placement. The study concluded that simulation would tie together the theory to practice issues more effectively.¹⁹⁵

However, Bowling et al, suggest that the practice theory gap increases despite the use of high-fidelity simulation. This is attributed to the fact that nursing students are not typically permitted to participate as a member of the healthcare team during their clinical experiences, thus widening the practice gap. The lack of a set number of clinical hours is also identified as a contributor to the gap.¹⁹⁶

Ratios

Whilst there are a few studies comparing the number of clinical practice hours in pre-registration programmes (and the proportion of those hours permitted to be replaced with simulation activities), there is little evidence on the optimum number of clinical hours, or the optimum ratio of clinical practice and theory hours.

In response, Daisha et al completed a descriptive comparison of the variability of clinical hours in four prelicensure nursing programmes in Texas, USA (two Associates Degree in Nursing (ADN) and two Bachelor of Science in Nursing (BSN) degrees). Total programme hours ranged from 796 to 948, and simulation hours ranged from 140 to 224. The study found that in ADN programmes, substantially more hours were allocated to Foundations and Medical-Surgical, than in the BSN programmes. Despite these, and other, differences between clinical and simulation hours, the study found that the programmes' licensure NCLEX results "were not commensurate with clinical hours": i.e., there were no statistically significant differences in the pass rates of the ADN and BSN programmes.

Breymier's review of literature on the subject of substitution of clinical hours for simulation found that a standard substitution ratio for simulation hours to supervised clinical hours does not exist among prelicensure nursing program.¹⁹⁷ He goes on to state that some schools of nursing may feel that a standard 1:1 ratio is safer because no guidelines exist suggesting an alternative, or that the two methods are equal in productivity. Those who use a 1:2 ratio may feel that the use of simulation is more time efficient, whilst those who adopt 2:1 may be uncertain as to the benefits of simulation education.¹⁹⁸

Sullivan et al found emerging evidence of a 2:1 ratio of clinical to simulation time despite a lack of empirical evidence on the optimum ratio. They suggest the 2:1 ratio has been adopted because of the perceived intensity and workload involved in simulation for the student.¹⁹⁹

In the Nordic countries, Ministerial orders

“allow a proportion of the total number of clinical hours to be replaced with time in the simulation centre”.

Although no ratio is stipulated. In this context, simulation learning

“means training in a realistic environment utilizing simulation equipment”.

However – as stated in section 2.5 – a number of challenges have been identified with replacing some clinical hours with simulation, notably:

- The students' ability to transfer the skills to clinical practice;
- EU regulations describe clinical learning as involving being 'in direct contact with a healthy or sick individual'.

Barriers to substituting clinical practice learning for simulation

The restrictions imposed by the EU Directive are seen as an obstacle to pedagogical development as they prevent the formal integration of simulation into the curriculum.²⁰⁰

In the USA, other barriers to the use of simulation have also been identified. One of these barriers relates to a theme identified earlier in this report: the definition of 'clinical practice hours'. While there is acknowledged to be a lack of a universal definition, in the US, 'clinical practice' has been defined by the National Organization of Nurse Practitioner Faculties (NONPF) as direct clinical care hours and does not include laboratory or training sessions within this minimum.²⁰¹

The lack of a universal definition makes comparisons of clinical practice and simulation extremely problematic, resulting in limited meaningful evidence on the efficacy of substituting clinical practice hours with simulation. Furthermore, when considering introducing simulation, a range of factors need to be taken into consideration when assessing its suitability, such as the level of study for the student, the concepts being taught, and the theoretical knowledge required.²⁰²

These factors may account for the limited number of comparative studies; however, the evidence supports the use of simulation as being beneficial in providing clinical experience practice. That said, there is a strong need for further research in this field. As Bogossian found in her review of evidence for simulation as a substitute for clinical practice

“**for the studies in which direct substitution occurred, the proportional substitution seemed to be arbitrarily determined in trial design and ranged from approximately 5%-50%**”²⁰³

Furthermore, the lack of robust evidence on the effectiveness of simulation learning more generally is regarded as a major concern. Although acknowledging there is increasing evidence on the effectiveness of simulation learning – in terms of effectiveness to improve knowledge, procedural skills, behaviour, teamwork and communication – studies don't tend to report impact on clinical outcomes.²⁰⁴

Future areas of focus should include determining the impact on patient outcomes and the wider public health agenda as well as skill and knowledge retention over time.²⁰⁵

Other considerations

As well as documented limitations, or barriers, to the integration of practice learning and of substitution for simulation there are a number of other considerations:

- The use of peer learning and collaborative practice placement models, which have been found to have considerable benefits in terms of developing students' team working skills and confidence. As with the optimum ratio of clinical practice and theory hours, there is inconclusive evidence on the optimal placement experience.²⁰⁶
- The pandemic has given rise to other alternative forms of pedagogy. One example is an initiative by the University of Derby whereby the clinical simulation team looked for ways in which tasks that students would otherwise have practiced in the clinical setting, or via supervised simulation activities, would be performed in the home environment. The team provided 60 students with 'Clinical Skills Training Boxes' containing the basic equipment for practicing four clinical skills: temperature, pulse, respiration and blood pressure observation and recording (TPRBP); aseptic non-touch technique; urinalysis; and use of personal protective equipment. Evaluation of the initiative revealed positive results: that following the experience, students tended to feel more confident and more competent in the four skills they had practiced. These results should be treated with caution however, due to the small sample size (30 students completed the pre-use questionnaire; 22 students completed the post-use questionnaire), and because the measures were self-reported.²⁰⁷

This review has not been able to identify evidence specifically on the subject of substitution of simulation for clinical practice hours in midwifery education. However, there are a number of studies – described below – that comment on the use of simulation in midwifery re-registration education, generally.

Simulation in midwifery pre-registration education

Burns et al confirm the effectiveness of simulation-based training for the development of midwifery students' **team-working skills**. Using a descriptive, exploratory study, 45 students (14 midwifery and 31 medical students) participated in two interprofessional learning days focused on emergency scenarios during birth. Although in the pre-workshop survey, students reported apprehension and ambivalence towards collaborative simulation-based learning, following the intervention both cohorts stated that learning to work together in a safe environment allowed them to develop an appreciation for each other's scope of practice and responsibilities.²⁰⁸

Stoodley et al evaluated the impact of simulating **the insertion and management of a neonatal nasogastric tube** on midwifery students' knowledge, confidence, and skills. Students **self-reported** on these three themes via a questionnaire administered pre-simulation, post-simulation (n=60) and on completion of a clinical placement (n=46). The study found that students' knowledge, confidence, and skills all increased significantly following the simulation activity and further, post-placement.²⁰⁹

A similar study by Calting et al, using a pre- and post-test design, tested midwifery students' (n=71) understanding, confidence and ability following a two-day simulation project to help **prepare students for their first clinical practice**. As with Stoodley's study, students self-reported their understanding, confidence and abilities as higher after the workshop; their self-reported ratings on these three areas were significantly higher following their clinical placement.²¹⁰ Power et al cites Calting's findings as being particularly relevant in the context of **managing emergency situations** – which by their nature are unpredictable – and suggests there is a strong rationale for embedding simulation and clinical skills sessions into pre-registration midwifery programmes.²¹¹

Evidence on the efficacy of **virtual simulators** – specifically immersive virtual reality – is extremely limited. As recently as 2018, Fealy et al found

“**a paucity of quality published literature on the application and/or integration of immersive virtual reality into nursing and midwifery tertiary education**”.

Despite identifying 506 records in their scoping review, after level one and two screening only two articles were quality checked and included for review.²¹²

Simulated practice – specifically Immersive Simulation Training (IST) – was also shown to be effective in a 2020 study by McKelvin et al. The study explored the impact of IST on midwifery and paramedic students' confidence to perform **basic life support in real-life stressful and life-threatening environments**. Using a mixed method approach with an explanatory sequential design, 17 first year students took part in the simulation. Measurements

were taken via a confidence questionnaire and focus groups; findings showed that confidence following IST was significantly improved when compared to conventional simulation training (CST). The results also highlighted the importance of students have a good foundation as a prerequisite (via CST), on which IST would then build deeper learning and preparedness.²¹³

“**Simulated practice using high fidelity has been shown to have significant benefits in the medical and nursing field. However, the benefits amongst paramedical and midwifery students are not well known.**”²¹⁴

Brady et al looked at the effectiveness of differing levels of fidelity in simulation used in midwifery education. The randomised three arm intervention trial sought to identify the level of fidelity that ‘best contributes to integrated and global clinical skills development in midwifery students.’ The 69 students taking part in the trial received theoretical instruction in performing **vaginal examination** following random allocation into one of three groups:

- low fidelity (part task trainer only),
- medium fidelity (part task trainer and life-sized poster of a pregnant woman) or
- progressive fidelity (part task trainer and a simulated standardised patient

The study found that progressive- and medium- fidelity simulation resulted in better outcomes than low fidelity simulation.

This conclusion is supported by Sherwood et al, in their 'review of reviews' which covered 18 RCTs and quasi-experimental trials with ~1192 participants across nursing, midwifery and allied health professionals. Although three quarters of the studies they looked at were found to exhibit a high risk of bias, they found that training on higher-fidelity mannequins was associated with improved performance immediately post-intervention, compared to lower-fidelity mannequins for **knowledge and psychomotor outcomes**.²¹⁵

However, low-fidelity techniques such as role-play have been found to be effective in **increasing students' perceived levels of confidence and teamworking**. A 2014 pilot at Queens University Belfast involved final year midwifery students introducing fourth year medical students to the concept of normal labour and birth. Birthing balls and birthing mannequins were used with midwifery students playing the role of women in labour, partner, or midwife. Following positive evaluation of the workshops by participants, the School of Nursing and Midwifery and the School of Medicine both committed to embed simulated intra-professional education into their curricula.²¹⁶

A Swedish longitudinal study explored midwifery students' experiences of simulation and skills training. Between 2011-15, 61 students at advanced level were interviewed in 13 group interviews. The study found that most students felt simulation and skill training were necessary to become familiar with **hands-on skills** and that **repeating tasks in a safe environment** was important so that mistakes could be made without compromising patient safety. The study also highlighted the role of the lecturer in providing instruction and feedback and noted the importance of including reflection and critical thinking in the simulation and skills training to develop learning.²¹⁷

Edwards et al observed "meaningful improvements in students' attitudes to teamwork, and knowledge acquisition" following a hybrid approach of "including short lectures, team-building exercises and practical simulation-based training for one obstetric (shoulder dystocia) and three generic emergencies (sepsis, haemorrhage, collapse)", 72 students took part in the training (34 medical and 38 midwifery students) with outcome measures including validated questionnaire and clinical knowledge, measured with validated multiple choice questions.

“**This training was associated with meaningful improvements in students' attitudes to teamwork, and knowledge acquisition.**”²¹⁸

3.6 Programme length and number of academic theory and practice hours

3.6.1 The requirements for pre-registration education

Table 11: EU Directive and NMC standards for programme length and number of academic theory and practice

Requirements	Nursing	Midwifery
EU Directive	<p>For nurses responsible for general care: at least three years of study consisting of at least 4,600 hours of theoretical and clinical training.</p> <p>Theoretical training should represent at least a third and clinical training at least one half of the minimum duration of training.</p>	<p>One of the following criteria must be satisfied:</p> <ul style="list-style-type: none"> ▪ (full-time training of at least three years as a midwife, which may in addition be expressed with the equivalent ECTS credits, consisting of at least 4 600 hours of theoretical and practical training, with at least one third of the minimum duration representing clinical training; ▪ full-time training as a midwife of at least two years, which may in addition be expressed with the equivalent ECTS credits, consisting of at least 3 600 hours, contingent upon possession of evidence of formal qualifications as a nurse responsible for general care referred to in point 5.2.2 of Annex V; ▪ full-time training as a midwife of at least 18 months, which may in addition be expressed with the equivalent ECTS credits, consisting of at least 3 000 hours, contingent upon possession of evidence of formal qualifications as a nurse responsible for general care referred to in point 5.2.2 of Annex V, and followed by one year's professional practice for which a certificate has been issued in accordance with paragraph 2
NMC standard	<p>As above, plus:</p> <ul style="list-style-type: none"> ▪ AElS in partnership with practice partners have the flexibility to design their own curriculum and the autonomy to decide on the proportion of generic and field specific hours provided. ▪ For practice learning, AElS must ensure students experience the range of hours expected of registered nurses. 	<p>Full time education and training as a midwife is a minimum of three years and 4,600 hours, or</p> <ul style="list-style-type: none"> ▪ where a student is already registered with the NMC as a Registered nurse: first level (adult), full-time education and training as a midwife shall be a minimum of two years and 3,600 hours, or ▪ where a student is already registered with the NMC as a Registered nurse: first level (adult), full-time education and training as a midwife shall be a minimum of 18 months and 3,000 hours, and in order for the qualification to be recognised in EU member states it must be followed by a year of professional midwifery practice.



According to Vermeulen et al, when the EU Directive was due for review by the European Commission in 2011, the European Midwives Association (EMA) proposed several changes including that full-time **midwifery education** should include at least 5,000h, with half of these hours working in direct clinical practice.

However, this proposal was not taken on board, with the revised Directive 2013/55/EU stating that a midwife should be educated in a full-time programme consisting of at least 4,600h of theory and practice (with at least one third of the minimum duration based in clinical practice).²¹⁹

3.6.2 Evidence from the NMC

In the 2014 evaluation of the NMC's **pre-registration standards and guidance**, stakeholders were asked about the current split between academic and practice-based elements of undergraduates. Most stakeholders agreed the split was appropriate, as long as the quality of placements and mentoring is high and facilitates the attainment of essential skills.

The report suggested that some stakeholders would like to see more emphasis on practice so that the split became closer to 60-70% of the time. The report acknowledged this was unlikely to be feasible however because of limited numbers of mentors and placement opportunities.²²⁰

Respondents to the NMC's 2017 consultation on the nurse proficiencies and education framework were asked, specifically in reference to the **education framework**:

“In recognition of the importance of theory and practice to student learning and proficiency, we propose that we continue to require an equal amount of education to be delivered in practice and theory. Do you support this position?”

Just over three quarters (77%) of all 935 respondents said that they do support this position (81% of organisations and 75% of individuals).²²¹

In follow-up comments a relatively small number of respondents (40) felt there could be potential for too much academic focus and a lack of practical experience. Others were also concerned about a potential lack of support, or mentors to achieve the standard.²²²



Midwifery

Respondents to the Future Midwife consultation, specifically in response to questions about the programme standards, asked similar questions as in the Nursing Education Standards Consultation.

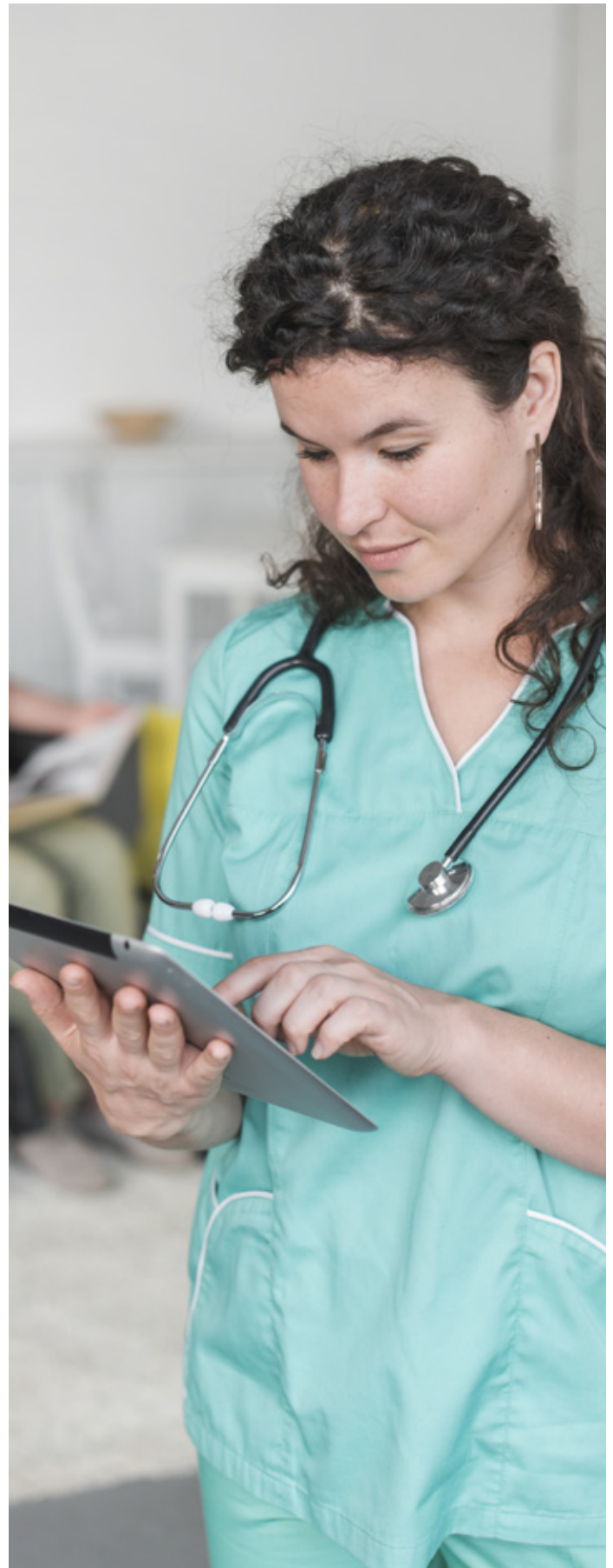
Just under half of midwives (48%) and 30% of organisations felt a minimum of 3 years (4,600 hours) is appropriate (based on 407 responses from midwives and 56 responses from organisations). However, 38% of midwives supported a 4-year programme:

- 21% proposed 6,100 hours
- 17% supporting 4,600 hours²²³

‘Several’ organisations were concerned that lengthening the course for midwives might create barriers for some demographic backgrounds and older candidates from entering the profession.^{224 225} Indeed, when the EU Directive was amended in 2013, calls from the EMA to increase the hours from 4,600hrs to 5,000hrs were resisted, suggesting the existing minimum number of hours is appropriate to achieve the necessary outcomes.

80% of midwives and 71% of organisations (407 and 49 responses, respectively) agreed (either agree or strongly agree) that midwifery programmes provide an equal balance of theory and practice learning using a range of learning, teaching and assessment strategies such as use of simulation and technology.^{226 227}

Following the consultation, the NMC retained the minimum programme length of three years/4,600 hours (and options for shortened programmes). This is despite some respondents expressing concerns that the proposed new proficiencies may be challenging to achieve within a three-year programme. However, in response to the consultation’s findings, the NMC stated that AElS were ‘not prevented from innovating and offering a programme which extends beyond three years if they wish to’.²²⁸



Findings from the literature

Findings from the international benchmarking review

Currently, the length of nursing and midwifery pre-registration education programmes is broadly consistent amongst the eight comparator countries investigated as part of this research: Australia, Canada, Ireland, New Zealand, Spain, Sweden, The Philippines, USA.

Programme length tends to be in the region of 3 or 4 years; however, overall programme hours are not always stipulated.

EU countries must comply with the requirements of EU Directive 2005/36/EC, which stipulates a minimum programme length of 4,600 hours for nursing and 3,600 hours for midwifery. Amongst other countries that do set overall programme hours, there is a wide variation.²²⁹

Within these overall hours, there is also a high degree of difference between the number of clinical practice hours that are required. Again, not all countries stipulate a minimum number of clinical practice hours, however, of those that do, the EU countries tend to have the highest.

Increasing student numbers are putting pressure on nursing and midwifery pre-registration education programmes worldwide, which creates challenges in providing sufficient high-quality learning experiences for students.²³⁰ This pressure is felt in many countries around the world, where they are experiencing a 'bottleneck' in increasing student numbers.²³¹ This in turn creates difficulties for teachers and supervisors to provide appropriate learning opportunities and support for students. Furthermore, the demand for clinical placement sites can be impacted by the number of clinical hours required for each programme.²³²

According to Roberts et al., additional, and associated challenges in providing simulation for prelicensure programmes include: the large costs of providing each placement; the decreasing numbers of willing and appropriately prepared preceptors; disparities in learning experiences and teaching practices, and the lack of student access to electronic patient records.²³³

An additional pressure identified by the Council of Deans of Health is the need to improve the quality of practice placements 'as part of the overall change needed in pre-registration nursing'²³⁴. The 'theory practice' gap often cited in literature and mentioned earlier in this report is compounded by a reported lack of quality experiences in some programmes. There are also concerns reported in international studies about the practical relevance of some nursing theory and teaching²³⁵.

These existing pressures have been exacerbated by the impact of the ongoing Covid-19 pandemic, which has necessarily reduced opportunities for clinical practice due to staffing pressures and safety concerns.

Proposed solutions include a potential reduction in clinical practice hours, or substitution with simulation learning. Other considerations already under review and the subject of research include collaborative placement models where more than one student can be assigned to one registered practitioner and where peer learning takes place.²³⁶

As mentioned above, whilst there is a degree of consistency in overall programme length of nursing and midwifery pre-registration education programmes, the stipulation of practice hours is hugely varied. For example, just 800 hours in Australia (plus additional CoC hours) to 2,300 hours in EU countries and as much as 2,346 in the Philippines (please see the benchmarking report for further details).



Nursing

In the USA, there is huge variability in the number of practice hours set by State Boards of Nursing (BONs). Bowling et al's review of 50 US Boards of Nursing requirements for pre-licensure education found that 30 contain some rules about clinical education such as defining 'clinical', setting the number of hours, or the use of simulation. Only 10 set a specific number of clinical hours for prelicensure programmes. The number of clinical hours set by the 10 BONs range from 400 to 750h, with an average of 510h.²³⁸ According to Daisha et al, in the absence of specific evidence or regulatory requirements, schools of nursing have used various methods to determine the number of clinical hours in their programmes. These include:

- 'ritual and tradition' – i.e., it has always been done that way
- Schedule convenience
- Availability of clinical sites²³⁹

There have been several published recommendations regarding the amount of clinical time required to reach competency in advanced nursing practice in the USA, however there is a dearth of literature related to acquiring competency based on clinical hours in prelicensure nursing.²⁴⁰ Whilst there is a growing body of research into the use of simulation – including the NCSBN national simulation study – there are no studies on the quality of and minimum hours needed for hands-on clinical experiences.²⁴¹

“There is no general agreement as to the type, quantity and quality of clinical experiences that are necessary to produce a competent graduate.”²³⁷



In the absence of robust evidence on the optimum number of hours required for supervised clinical experience, the NCSBN's model rules suggest that the number of hours should be comparable to clinical hours in similar programmes, such as those with the same level of education and those of comparable size. According to Hayden (2010), the average number of clinical hours for RN programmes are:

- associate-degree programs = 621
- diploma programs = 737
- baccalaureate programs = 733
- master's entry programs = 780

Quoting Hickerson et al, Daisha also highlights the impact of employer feedback on decisions around the number of clinical hours. Hickerson found that numbers of hours tend to be higher in programmes where employers have said that new graduates are not practice ready. Indeed, recent research in the USA reports on the unpreparedness of new graduates when entering the nursing profession. They are typically found to lack critical thinking and leadership skills and they may struggle with anticipating interventions and recognising symptoms indicating deteriorating health²⁴², thus impacting on the effectiveness and quality of care provided. Feedback from new nurses in the USA supports this finding; they report that their prelicensure education did not provide enough dedicated clinical training and opportunities to practice communication, organisation, time management and psychomotor skills.²⁴³ However,

“

“there is no substantial evidence that increasing hours will achieve the desired outcome”

”

of improving students' skills – specifically in clinical reasoning, critical thinking and service excellence.²⁴⁴

Indeed, there is no guarantee that a programme with a higher number of clinical hours will produce students with the necessary skills. As highlighted by Henriksen, there will be students who will not have achieved a satisfactory level of competence even after completing 2,300 hours of clinical practice. He posits that student competencies are dependent on the quality and amount of supervision that the students receive during the clinical practice – rather than the number of hours. The quality of supervision is influenced by various factors including relationships between students and faculty, and ‘feelings of belonging’.²⁴⁵

Recent evidence from the USA supports the claim that a higher number of clinical practice hours does not necessarily equate to better outcomes: programme type and total number of clinical hours are not predictive of the percentage of students who pass the NCLEX exam.²⁴⁶ The findings go on to suggest that the NCLEX may not be accurately measuring what students learn in clinical practice and that the quality of clinical education may be more important than quantity.





Midwifery

Whilst the majority of studies examining clinical experience focus on nursing, Ebert et al looked at the number and type of clinical experiences required to ensure competent midwifery graduates in Australia. The extant current situation included a requirement for students to complete a minimum number of clinical skills and Continuity of Care Experience (CoC) relationships in order to register when they completed their degree. This requirement was laid down in a minimum number of ‘clinical practicum hours’ (typically direct clinical observation/supervision and direct clinical practice). The study found that

“there is no evidence to date that a set number of experiences or hours ensures professional competence in the clinical environment”.²⁴⁷

In New Zealand, blended learning – necessitated by the nation’s rurality – is the norm. The approach consists of face-to-face, online, and practice-based learning. Each school employs midwifery educators in distant regions who

“teach practice skills, run tutorials, assess students, support students and midwives during practice placements and provide students with pastoral support.”

The blended learning approach is regarded as a success, increasing access for midwifery students, and growing the workforce in rural areas.²⁴⁸

Further research on midwifery in New Zealand highlights the importance of students developing effective communication and emotional intelligence skills required to be successful practitioners, via practice placements. However, the ‘on call’ aspects of clinical practice experience place various demands on both students and supervisors in terms of managing study, work, and home life. In recognition of this, schools have established support mechanisms.²⁴⁹ This highlights the importance of embedding appropriate pastoral and other types of support for students during their clinical experience.





4. Key Findings

This study was undertaken from December 2020-March 2021: a unique point in history, at which the UK was on the brink of exiting the EU and when the world was in the midst of a pandemic.

The first of these two factors was the driver for this research. Since 2005, nursing and midwifery pre-registration education and training has been aligned with EU regulation on the mutual recognition of professional qualifications. The intent of the Directive (2005/36/E) is to facilitate free movement and automatic recognition of seven professions, including nurses and midwives.

When the UK left the EU on the 31st December 2020, the Directive no longer had legal force and the UK is free to consider alternative approaches to those stipulated by the Directive. These include decisions concerning the following themes: programme length/hours; ratio of theory and clinical practice; admission, selection and progression requirements; RPL; shorted courses and; content. A further area of interest for the NMC is the use of simulation learning which, under the EU Directive, is permitted in a limited number of circumstances for midwifery, but the circumstances for nursing are not specified. The topic of simulation learning is particularly pertinent in the context of the ongoing pandemic where access to clinical practice placements is severely constrained.

The evidence for this desk study was accessed and analysed using a rapid evidence assessment methodology. A quality assessment of the evidence is contained in a separate quality matrix. Further details are contained in the introduction for this report.

Concurrently with this piece of work, the NMC also commissioned a separate and complementary primary research study to elicit stakeholder views on the themes above and the outcomes below. The findings of the primary research will be assimilated with the key findings of this desk study into an overarching synthesis report which will address the key research questions.



The impact and effectiveness of EU Directive 2005/36/EC

A major finding of this review is that direct evidence on the impact and/or effectiveness of the EU Directive on nursing and midwifery pre-registration education is extremely limited. This review has drawn on numerous sources where the evidence presented is tangential to the impact and effectiveness of the EU Directive and it is therefore not possible to draw firm conclusions. However, it is possible to draw some inferences from other countries' standards for pre-registration education of nurses and midwives – where approaches are broadly comparable to the UK, for example in terms of entry requirements, programme length and approaches to RLP – but there is very little robust evidence to show whether or not these alternative approaches are effective.

The key outcomes of interest for the NMC (as listed below) are not well addressed in the literature, specifically within the context of the EU Directive. Some of the outcomes are broad and may be influenced by various factors in combination – social, political, economic – therefore the impact of the EU Directive is likely to be extremely difficult to measure. This may be why the subject is not well researched. These outcomes are:

- Public protection and safety
- Effectiveness and quality of care for service users
- People with different protected characteristics (including nurses, midwives, nursing associates, students and services users)

- The experiences and perceptions of nurses, midwives, nursing associates and students
- The number and supply of nurses, midwives, and nursing associate
- Effectiveness, availability, and quality of education programmes

The subject of **public protection and patient safety** appears more generally in the UK-based literature, but the findings are not extrapolated to the context of the EU Directive. These studies point to a requirement for embedding of theory and practice in four areas:

- A need for the teaching of handwashing and disposal of PPE to be strengthened;
- The need to close a perceived theory-practice gap around maintaining adequate infection control and clinical skills
- Incorporation of intentional rounding in education programmes (intentional rounding is a structured process employed by nurses on wards to check on patients at set times)
- More consistency and focus on assessing health and character as part of education programmes

Literature on ‘**effectiveness and quality of care for service-users**’ tends to focus on the perspective of user involvement in student recruitment and assessment, for example. This review did not find any evidence that met the inclusion criteria that pertains specifically to effectiveness and quality care within the context of the impact of the EU Directive.

The subject of ‘**protected characteristics**’ does not arise often in the literature. Where it does, this is mainly in McClelland’s study on the experiences and outcomes of undergraduate health professional students with protected characteristics; findings specifically cover learning difficulties, gender, and ethnicity. There is also a small amount of literature stating the need for students with different diversity characteristics to be supported and on teaching students how to deal with discriminatory behaviour.

On the topic of ‘**experiences and perceptions of nurses, midwives and nursing associates and students**’ this review found numerous studies in the EU comparator countries of Ireland, Spain and Sweden. However, these studies do not establish links between experiences and the requirements of the EU Directive and the studies are small scale. The main findings of those studies point to:

- **Elevated levels of stress** amongst pre-registration education students on both nursing and midwifery courses. The cause of stress is mainly related to clinical placements with students expressing anxiety and a sense of not fitting in or developing relationships with staff. The evidence emphasises the importance of supervision and support for midwives, which is not always readily available or of good quality. The evidence suggests there is a need for mental health and wellbeing support for students on courses, as well as good quality supervision and mentorship.

- **A deficit in some areas of competence** in newly qualified nurses and midwives. Examples of the types of skills lacking include those relating to direct clinical practice and in confidence.

Literature on the **effectiveness, availability and quality of education programmes** is also limited (i.e., few studies meet the inclusion criteria). Evidence identified by this review tends to be tangential, except one Spanish study which identified that learning activities at one university were falling short of the established quality indicators. One other exception is Henriksen et al who highlight restrictions around the replacement of clinical learning hours with simulation (see below). Another theme in the literature is a theory practice gap and a lack of clinical skills amongst nursing students. Furthermore, this review has found limited evidence on the extent to which skills and knowledge are retained by students when they enter practice. However, several studies discuss the importance of good quality supervision and mentorship; this is typically in the context of clinical placements and simulation learning.

This review identified two studies meeting the inclusion criteria that directly reference the impact of the EU Directive:

1. Henriksen et al (2019) which identifies the EU Directive as a barrier to pedagogical development and innovation because of the way in which clinical learning is defined, i.e., as: ‘in direct contact with a healthy or sick individual’. The authors suggest this hinders the use of simulation learning.
2. Kirwan, et al (2019) specifically cite the limitations of the EU core curriculum. Their study suggests that further guidance on the inclusion of patient safety in the core curriculum of nurses is needed.

Alternative approaches to the EU Directive

Evidence pertaining to specific requirements for pre-registration programmes (e.g., programme length, theory/practice hours, approaches to RPL) as stated in the EU Directive is patchy. The majority of relevant literature that meets the inclusion criteria for this study emanates mainly from the USA as well as Australia and New Zealand. The most well-researched topic is simulation learning.

The summary below draws together the findings from this evidence review and from the benchmarking study.

Programme length

- The length of nursing and midwifery pre-registration education programmes (minimum 3-years) is broadly consistent with those in comparator countries; however, they are notably shorter than three of the four comparator professions in the UK in scope of this study. Doctors and Dentists study for five years, Pharmacists for four years.
- Not all comparator countries set total programme hours, therefore it is challenging to make comparisons with other countries outside of the EU. However, it appears the UK is broadly on par with what happens elsewhere in the world, particularly in terms of the required educational attainment level (i.e., a degree).

Clinical practice and theory hours

- It is more typical for a minimum number of clinical practice hours to be stipulated in nursing and midwifery pre-registration education, than theory hours. There are extremely broad variations in the number of clinical practice hours in pre-registration education programmes, worldwide.
- The subject of clinical placements is cross-cutting and perhaps the most well-covered from two main standpoints: the experiences of student nurses and midwives (as cited above in respect of stress and anxiety), and protected characteristics. The subject of clinical placements is also well-covered in the international literature. Typically, the evidence highlights the increasingly acute lack of good quality clinical placements and mentors – and in the face of growing demand from expanding student numbers. This issue is currently compounded by the restrictions imposed by the Covid-19 pandemic.
- The study by Henriksen et al²⁵⁰ cited above makes a link between a lack of placements and restrictions imposed by the EU Directive, suggesting that if nursing students had opportunities to experience placements in patients' homes this might: 1) help to alleviate the problem and 2) expose students to more current practice (i.e., community care). However, this finding is not relevant to the UK context where midwives can and do experience care in women's homes.
- Most academic studies have focused on comparing the number of clinical practice hours in different pre-registration education programmes in an attempt to identify the optimum number, however there is no agreement on the type, quality or quantity of hours that are necessary to produce a competent nurse or midwife. That said, there is evidence to suggest that the quality of the experience is the most critical factor.

- The evidence from New Zealand and Australia suggests that it is possible to achieve successful outcomes with a lower number of clinical practice hours than stipulated in the EU Directive. In New Zealand and Australia, the focus on student support would appear to be a factor however, enhancing the clinical learning experience. Additionally, simulation is used extensively – particularly in Australia for both nursing and midwifery – as an addition to the required clinical practice experience. Other studies draw attention to supervision as another critical success factor, rather than the number of hours. Pre-licensure programmes in the USA average c. 700 hours – and there is no evidence to suggest that high numbers of clinical practice hours contribute to better outcomes on the NCLEX (the national licensing exam for nurses).
- Student support is a recurring theme in the literature. This is covered from a variety of perspectives, and is frequently cited in respect of clinical placements, with students not always receiving sufficient supervision, due to high workloads of mentors meaning that there can be a substantial amount of ‘down time’.
- In 2014 research undertaken with stakeholders, the NMC found that stakeholders agreed the current split between academic and practice-based elements was appropriate – on the condition that the quality of placements and mentoring is high, thus facilitating the attainment of essential skills.

Simulation learning

- Perhaps the most well-covered subject in the literature is simulation-learning, although there are issues with the robustness of much of the evidence such as weak study design (e.g., mixed samples) and substantial differences in design and assessment methods.
- Many of the larger studies use a pre- and post-test design, in which students self-report their satisfaction and confidence levels. There are few objective measures used to measure the impact of simulation learning. For these reasons, it is difficult to draw firm conclusions on the efficacy of simulation. Also, little is known about for which groups simulation might be helpful. However, this is a growing body of good quality research on the use and impact of simulation learning, on which this review has drawn.

“...there is limited but emerging evidence to support the use of simulation as an effective teaching strategy²⁵¹”

Substitution of clinical hours for simulation

- The benefits of simulation are well documented, for example simulation learning provides opportunities for students to practice tasks in a safe environment; depending on the technology used, feedback can be immediate; some activities can be performed unsupervised; practicing tasks on mannequins and part-task trainers removes the risk of patient harm.
- This review has found a relatively small but rich stream of evidence relating specifically to the topic of substitution of clinical practice for simulation. There appears to be a growing body of literature on this topic as demands on clinical placement providers grow and alternatives to direct, face to face clinical experiences are sought.
- Evidence reviewed for this report reveals that simulation is often more efficient than clinical practice because there is less down-time (such as waiting for supervisors to be free, or waiting for suitable patients to be available) and it can be better suited to developing skills such as communication, critical thinking, and teamwork. Because activities can be completed in less time, there can be a case made for reducing clinical learning hours by substituting those with simulation. Given the positive effects of simulation on developing students' critical thinking, problem solving skills (as well as team work etc.) there is an argument for replacing some clinical practice with simulation to use the hours more efficiently.
- Furthermore, there is limited evidence to suggest the substitution of clinical practice hours with simulation impacts on outcomes. The evidence suggests that the number of clinical hours – and the volume of simulation within those clinical hours – does not have an impact on achievement of outcomes, nor on practice. For example, on the latter point, the evidence from the NCSBN study in USA on nursing pre-registration education – perhaps the most robust of its kind – did not find any statistically significant difference in measures between the control group, those whose clinical hours were replaced with 25% simulation, and those replaced with 50% simulation.
- In the USA, the use of simulation is widespread, however the proportion of simulation that replaces clinical hours is highly variable. Simulation is also now embedded into pre-registration education programmes in Nordic countries. With Ministerial orders in the Nordic countries allowing a portion of the total number of clinical hours to be replaced with time in the simulation centre
- There is some evidence on whether certain simulation modalities – used in place of clinical hours practice hours – are more effective than others, such as midwifery in New Zealand, where online learning is integrated into a blended learning approach. The approach consists of face-to-face, online, and practice-based learning.²⁵² Whilst there does not appear to be any direct evidence on the effectiveness of this modality, outcomes of midwifery programmes suggest the combination of modalities is highly effective.
- During clinical experience, the opportunity for building confidence, and developing teamworking skills, critical thinking and communication can be overlooked in favour of task completion. The first interim report for this current study for the NMC points to successful outcomes when simulation is used for developing these skills through a range of, typically, high-fidelity activities such as role play.

- In some cases, simulation has been shown to achieve better outcomes – e.g. completing more tasks, more efficiently – than being in the clinical environment because of the more structured and scripted nature of the activities.²⁵³ The use of simulation can therefore introduce efficiencies into programmes – less down-time, more structure and for certain types of simulation – such as those involving virtual or online learning – the ability for learners to practice techniques during their own time.
- This research has revealed that the lack of a universal definition of clinical practice – and of simulation learning – may be hampering research in this area because, without clear definitions, it is difficult to make comparisons.

More research is required:

“Across the world, there have been several studies that have already looked at the use of simulation to replace part of clinical practice in a variety of health professions with great success. However, more work needs to be done before any conclusions can be determined as to its efficacy.”²⁵⁴

Ratios of clinical learning hours and simulation

“the critically important question of the optimum range of clinical hours and the distribution of these hours remains unanswered.”²⁵⁵

- The question of the optimum ratio of clinical practice to simulation is extremely difficult to answer. Few studies focus on this specific point, and the findings vary. However, the current evidence reviewed for this study suggests that a ratio of 2:1 is probably most common, but some schools in the USA will adopt a ratio of 1:1 or even 1:2.



RPL

- Whilst RPL is permitted for pre-registration nursing programmes, the EU Directive does not specify the percentage of a nursing programme that can be accredited as Accreditation of Prior Learning (APL). For midwifery, shortened programmes are accessible to nurses via recognition of formal qualification/s. RPL is not specifically addressed.
- There is limited evidence on the impact or effect of RPL on comparator programmes in other countries. Where RPL does take place, it is usually offered for direct-entry undergraduate courses for both nursing and midwifery, but there is no available evidence on RPL being used for pre-registration post-graduate midwifery training. Where RPL is permitted for midwifery courses in other countries, it usually consists of 'shortened programmes', as it is in the UK under the auspices of the EU Directive.
- The NMC's 2017 consultation on the nurse proficiencies and education framework found that the majority (75%) of respondents agreed that the NMC should continue to set a maximum limit for RPL.

Shortened programmes

- Again, the literature is sparse when it comes to the topic of shortened programmes. The concept is not covered, nor the terminology routinely used, in the evidence. One study met the inclusion criteria for this research: a literature review and survey of 62 midwifery lecturers in the UK. The research confirmed the lack of evidence on shortened courses and concluded that the literature reveals little difference between the experiences of students on the long or shortened programme.
- Where these sorts of programmes exist in comparator countries, they are typically used as bridging courses for either foreign-educated nurses, for nurses who have already completed shorter nursing education programmes (e.g., as is the case in Spain), or for graduates with a Bachelor's degree in a similar subject area, as is the case in Canada.

Entry criteria

- This review has also found that, internationally, in the comparator countries within scope of this review, education standards for nursing and midwifery rarely publish rules about entry requirements.
- Entry requirements are almost always set by education institutions.
- When the pre-registration education standards were evaluated in 2015, the report commented that the differing approaches by universities resulted in inconsistencies and variation in how students are selected, taught and assessed. However, the review found broad support for the current entry criteria, although they could be tightened to achieve greater consistency between AELs.



Content

- The content of international nursing and midwifery programmes varies hugely in its level of specificity.
- This review has found that, generally, education standards for nursing are aligned to the countries' published, national core competencies. Nurses are required to demonstrate these competencies upon entering the profession.
- For midwifery, content tends to be much more prescriptive and specific. As well as core competencies, standards for the education of midwives are much more precise in terms of practical learning objectives. For example, as with the EU Directive, standards for comparator countries stipulate the number of births, care visits or clinical assessment required to be achieved (further details are contained in the benchmarking report).
- In this sense the approach taken in the UK appears to be broadly comparable to the approaches taken in the comparator countries of aligning education standards to standards of proficiencies.
- According to the evaluation of the NMC's pre-registration standards, stakeholders agree that the SPME and SPNE accurately represent the core requirements for newly registered professionals. However, the evaluation report stated that not all nursing and midwifery students can demonstrate all the outcomes in the standards at the point of registration.
- A 2020 review of the EU Directive conducted on behalf of the European Commission found a number of gaps in content for nursing programmes, including: Person-centered care theories; Inter-/multidisciplinary theories; Management theories applied to nursing; Evidence-based practice; Technical progress.

- Currently, the NMC standards go beyond those of the EU Directive. In 2016 the European Commission conducted an evaluation of the Professional Qualifications Directive 2005/36/EC for Midwifery. The evaluation found that most respondents agreed 'the minimum training requirements for midwives need to be updated and to be more focused on competencies and skills'. A separate mapping exercise conducted in 2018, concluded that all EU member countries had implemented the requirements of Annex V in their national regulation of midwifery education, but that active participation in

“vaginal breech births and assessment and management of perineal trauma were difficult competencies to acquire in practice”.

In response, the content was updated. A major conclusion was also that the language of Annex V needed updating to reflect the ICM definition of the midwife and the Lancet series on Midwifery.



Appendix 1 - Search terms and databases

The following databases were used in this review:

- Google Scholar
- Semantic Scholar
- JSTOR
- PubMed

Search terms used for searches in the ‘title’ and ‘abstract’ fields of academic literature:

“academic theory hours in [profession] education”
 “academic theory hours in [profession] education”
 “accreditation of prior learning [profession]”
 “APL [profession]”
 “clinical simulation in [profession] education”
 “Directive 2005/36/EC”
 “Directive 2005/36/EC+ effectiveness”
 “Directive 2005/36/EC+ evaluation”
 “Directive 2005/36/EC+ impact”
 “effectiveness [profession] education”
 “effectiveness of [profession] education”
 “effectiveness of [profession] training”
 “entry requirements [profession]”
 “experience [profession] education”
 “experience [profession] education”
 “patient experience [profession] education”
 “patient experience”
 “patient safety [profession] education”
 “perceptions [profession] education”
 “practice hours [profession] education”
 “practice hours [profession] education”
 “practice learning [profession]”
 “practice learning [profession]”
 “practice learning hours [profession]”
 “pre-registration education [profession]”
 “[profession] education learning by simulation”
 “protected characteristics [profession] training”
 “protected characteristics [profession]”
 “recognition of prior learning [profession]”
 “RPL [profession]”
 “service user experience”
 “Shortened course [profession]”

“Shortened programme [profession]”
 “simulation in [profession]”
 “undergraduate [profession]”
 “undergraduate [profession]”
 “undergraduate [profession]”
 “use of simulation in [profession] training”

Appendix 2 - Quality assessment

Author	Title	Date	Published By	Country	Core Profession	Study type (e.g. systematic, meta-analysis, RCT etc.)	Number of students
Aebersold, Michell	Simulation-Based Learning: No Longer a Novelty in Undergraduate Education	2018	The Online Journal of Issues in Nursing	USA	Nursing	Discussion and descriptive analysis - literature review	Literature review - 43
Andersen, Patrea; Hanson, Julie; Dunn, Peter K.	The effects of a virtual learning environment compared with an individual handheld device on pharmacology knowledge acquisition, satisfaction and comfort ratings	2020	Nurse Education Today	Austria	Both	Post-test and pre-test design	249 undergraduate nursing students
Ansell, H; Whitehead, B	An initiative for student nurses to practise clinical skills at home	2021	Nursing Times/Clinical Practice Innovation Nurse Education	UK	Nursing	Discussion paper	68 nursing students
Bäck, Lena; Karlström, Annika	Developing confidence during midwifery training: The experience of Swedish final year students	2020	Sexual and Reproductive Healthcare	Sweden	Midwifery	Qualitative study	403 students

Number of studies/ population	Characteristics and setting	Intervention	Comparison	Outcomes and analysis method	Results	Quality assessment
Literature review 3 references		Integration of simulation into learning				Moderate
9 second year undergraduate nursing and midwifery stu- dents.	School of Nursing and Midwifery in a regional university in Southeast Queensland, Australia	Use of VR Simulation	Pre and post test	Online multiple choice tests to measure knowledge acquisition; Self-reported satisfaction scores and comfort ratings were collected using questionnaires.	Participants were not disadvantaged in terms of knowledge acquisition by using either VR or the mobile handheld visualisation tool	High
1 student responses	University of Derby	This article describes an initiative for students to practise clinical skills in their own homes using university- supplied instructions and equipment, implemented as a response to the restrictions to on-campus teaching during the coronavirus pandemic.	Four clinical skills: temperature, pulse, respiration and blood pressure observation and recording (TPRBP); aseptic non-touch technique; urinalysis; and use of personal protective equipment.		We have observed that it is a useful way for students to learn clinical skills using university supplied equipment and instructions in their own homes	Low
1 responses collected		Factors that increased and decreased the confidence of midwifery students in clinical practice		The study made use of an open-ended questionnaire which invited Swedish midwifery students to self-assess against selected midwifery competencies. Responses were analysed through manifest content analysis	The most important factor for developing confidence in clinical practice was supervision	High

Bäck, Lena; Sharma, Bharati; Karlström, Annika; Tunon, Katarina; Hildingsson, Ingegerd.	Professional confidence among Swedish final year midwifery students – A cross-sectional study	2017	Sexual & Reproductive Healthcare	Sweden	Midwifery	Cross sectional survey	Stu mic pro in 5 we par que
Barcelo, J. M	Medical laboratory science and nursing students' perception of academic learning environment in a Philippine university using Dundee Ready Educational Environment Measure (DREEM)	2016	Journal of Educational Evaluation for Health Professionals	Philippines	Nursing	Cross-sectional survey	34 nur
Birks, M. et al	Uncovering degrees of workplace bullying: A comparison of baccalaureate nursing students' experiences during clinical placement in Australia and the UK	2017	Nurse Education in Practice	Australia	Nursing	Secondary analysis conducted on two primary cross-sectional studies	83 and stu
Blakeslee, Janine R.	Effects of high-fidelity simulation on the critical thinking skills of baccalaureate nursing students: A causal-comparative research study	2020	Nurse Education Today	USA	Nursing	Qualitative casual-comparative with pre-test, post-test design	69 bac nur
Bogossian, Fiona E; Cant, Robyn P; Ballard, Emma L; Cooper, Simon J; Levett-Jones, Tracey L; McKenna, Lisa G; Ng, Linda C; Seaton, Philippa C	Locating "gold standard" evidence for simulation as a substitute for clinical practice in precensure health professional education: A systematic review	2019	Journal of Clinical Nursing	Various	Both	Literature Review	10 stu rep 2,3 fro dis cou
Bogossian, Fiona E; Cooper, Simon; Kelly, Michelle; Levett-Jones, Tracey; McKenna, Lisa; Slark, Julia; Seaton; Philippa	Best practice in clinical simulation education - are we there yet? A cross-sectional survey of simulation in Australian and New Zealand undergraduate nursing education	2018	Collegian	Australia	Nursing	Cross-sectional online survey of lead nursing academics	61 sur (36 rat

students on all midwifery programmes in Sweden are invited to participate in a questionnaire		Professional confidence of final-year Swedish midwifery students		students used questionnaire to self-report their assessments of confidence against four selected domains of ICM competencies	Most students were confident handling normal pregnancy, but some students were more confident than others in handling obstetric emergency situations	High
11 Filipino nursing students	Department of Medical Laboratory Science, School of Natural Sciences, and the School of Nursing at Saint Louis University in the Philippines	Perceptions of medical laboratory science students and nursing students of their academic learning environment	Responses were compared according to course of study, gender, and year level	Respondents answered the Dundee Ready Education Environment Measure (DREEM) instrument from April to May 2016	While students broadly viewed their academic learning environment as 'more positive than negative', nursing students identified a range of problem areas. Most of these problems related specifically to students' instructors	Moderate
13 Australian and 561 UK student nurses	Nursing students in Australia and UK	Australian and UK nursing students' experiences of bullying during clinical placements	Comparisons of experiences of Australian and UK nursing students	Data collected through the Student Experience of Bullying during Clinical Placement (SEBDPC) questionnaire were analysed using descriptive and inferential statistics	The study found that 50.1% of Australian nursing students experienced bullying while on placement, compared with 35.5% of students in the UK	High
junior baccalaureate nursing students	A private university in the midwestern United States which offers a four-year Bachelor of Science Nursing program	Use of VR simulation on critical thinking skills	Pre and post test; 36 students in simulation group, 33 in a comparison group	Critical thinking skills of participants measured using The Health Science Reasoning Test (HSRT) in pre and post tests	There was no significant difference between the mean critical thinking scores of nursing students who took part in simulation, compared to those who used written case studies	Moderate
primary studies included representing 170 students from three health disciplines in four countries	Nine studies were experimental and quasi-experimental and methodological quality was assessed as moderate to high with good to very good inter-rater agreement.	Collating evidence on use of simulation-based education as substitution for clinical placement in prelicensure programme		A systematic review and quality appraisal of primary studies related to prelicensure students in all health disciplines, guided by the PRISMA checklist.	Included studies were heterogenous in simulation interventions (proportion, ratio and duration) and in the evaluation of outcomes. Future studies should incorporate standardised simulation curricula, widen the health professions represented and strengthen experimental designs.	High
electronic survey responses (61% response rate)	HEIs offering courses leading to nurse registration in Australia and New Zealand	The extent and use of simulation in tertiary nursing education courses in Australia and New Zealand		Thematic analysis of survey responses	Simulation was embedded in curricula and positively valued as a substitute for clinical placement, but there was wide variation in the allocation of programme hours to simulation	Moderate

Bowling, Ann M; Cooper, Rhonda; Kellish, Ashley; Kubin, Laura; Smith, Tedra	No Evidence to Support Number of Clinical Hours Necessary for Nursing Competency	2018	Journal of Pediatric Nursing	USA	Nursing	Descriptive comparative study	Pre nu edu re of Sta Nu a s me So Pe
Bradley, Cynthia Sherraden; Johnson, Brandon Kyle; Dreifuerst, Kristina Thomas; White, Patti; Conde, Susan Kata; Meakim, Colleen H.; Curry-Lourenco, Kim; Childress, Reba Moyer	Regulation of Simulation Use in United States Prelicensure Nursing Programs	2019	Clinical Simulation in Nursing	USA	Nursing	Descriptive comparative study	Gu sta all Sta Nu rev we inte and
Bradshaw, Carmel; Murphy Tighe, Sylvia; Doody, Owen	Midwifery students' experiences of their clinical internship: A qualitative descriptive study	2018	Nurse Education Today	Ireland	Midwifery	Descriptive qualitative study using focus groups	13 BS stu
Breymier, Tonya L; Rutherford-Hemming, Tonya; Horsley, Trisha Leann; Atz, Teresa; Smith, Lisa G; Badowski, Donna; Connor, Kelley	Substitution of Clinical Experience With Simulation in Prelicensure Nursing Programs: A National Survey in the United States	2015	Clinical Simulation in Nursing	USA	Nursing	Descriptive survey	Su to pre sch nu
Burns, Elaine S; Duff, Margie; Leggett, Janie; Schmied, Virginia	Emergency scenarios in maternity: An exploratory study of a midwifery and medical student simulation-based learning collaboration	2020	Women and Birth	Australia	Midwifery	Descriptive, exploratory study	45 mic me
Butler, Michelle M; Hutton, Eileen K; McNiven, Patricia S	Midwifery education in Canada	2016	Midwifery	Canada	Midwifery	Discussion paper	

licensure nursing education requirements all 50 United State Boards of Nursing, plus survey of members of the Society of Pediatric Nurses	US State Boards of Nursing	Number of required clinical hours and definitions for clinical experience across all 50 US Boards of Nursing	Comparison of minimum clinical hours across the 50 state Boards of Nursing		Only ten states outline any requirements regarding the required number of clinical hours for prelicensure nursing education and twenty-six states incorporate language that defines clinical experiences	High
Guidelines/standards for 50 United State Boards of Nursing were reviewed - BONs were queried by internet, phone and email	US State Boards of Nursing	Regulations and guidelines for the use of simulation in nursing education in each US Board of Nursing	Comparison of guidelines/standards for use of simulation across the 50 state Boards of Nursing		More than half of the BONs reported regulations for simulation use, but they varied greatly. Some had regulations defining a percentage of traditional clinical hours that could be replaced with simulation.	High
Final-year BSc Midwifery students	BSc Midwifery students' in the final year of their programme in an Irish University	Midwifery students' experiences of their clinical internship		Thematic analysis of focus groups	Midwifery students' experience considerable stress during the internship period	Low
Survey was sent over 1,400 licensure schools of nursing in USA		Current use of simulation as substitution for clinical practice in nursing education in USA			Schools of nursing reported various substitution ratios demonstrating ambiguity between institutions	High
Students (14 midwifery, 31 medical)		A 6 hour interprofessional simulation-based learning workshop		Pre and post survey	Both student cohorts commented on a perceived power imbalance and a sense of each profession having to 'prove' their knowledge levels. Students stated that learning to work together in a safe environment allowed them to develop an appreciation for each other's scope of practice and responsibilities in an emergency situation.	Moderate
	Midwifery education programs in Ontario and British Columbia	Overview of the approach to midwifery education in Canada			The Canadian model of midwifery education has been very effective with low attrition rates and high demand for the number of places available	Moderate

Castro-Palaganas, Erlinda et al	An examination of the causes, consequences, and policy responses to the migration of highly trained health personnel from the Philippines: The high cost of living/leaving-a mixed method study	2017	Human Resources for Health	Philippines	Various	Mixed methods approach including scoping review of policy documents, stakeholder interviews and household survey with Filipino doctors, nurses, midwives and physical therapists	37 sta inte ho sur doc nur idw 8 p the Sci pol and lite
Cipher, Daisha J; LeFlore, Judy L; Urban, Regina W; Mancini, Mary E	Variability of clinical hours in prelicensure nursing programs: Time for a reevaluation?	2021	Teaching and Learning in Nursing	USA	Nursing	Descriptive comparative study	27 acr lice pro
Cohen, Susanna R., Celeste R Thomas, Claudia Gerard	The Clinical Learning Dyad Model: An Innovation in Midwifery Education	2015	Midwifery Women's Health	USA	Midwifery	Discussion paper	
Coldridge, Liz; Davies, Sarah	"Am I too emotional for this job?" An exploration of student midwives' experiences of coping with traumatic events in the labour ward	2017	Midwifery	England	Midwifery	Qualitative descriptive study using qualitative interviews	11 thir stu

<p>key stakeholder interviews; household surveys with 7 doctors, 329 nurses, 66 midwives, and 1 physical therapists. Mapping review of policy documents and academic literature</p>	<p>Healthcare professionals in the Philippines</p>	<p>Causes, consequences and policy responses relating to the outflow of human resources for health (HRH) from the Philippines</p>		<p>Thematic analysis and descriptive analysis using frequency and cross-tabulations</p>	<p>The migration of health workers has both negative and positive consequences for the Philippine health system and its health workers</p>	<p>High</p>
<p>1 students across 4 pre-licensure nursing programs</p>	<p>Two Associate Degree (ADN) and two Bachelor of Science (BSN) nursing programs</p>		<p>Numbers of clinical and simulation hours across 4 pre-licensure nursing programmes</p>		<p>Large variabilities existed in the number of clinical and simulation hours across the four programmes. The findings suggest that prelicensure nursing programmes' licensure examination results were not commensurate with clinical hours</p>	<p>Moderate</p>
		<p>Advantages and challenges of clinical learning dyad model (CLDM) in midwifery education</p>		<p>The article discusses the origins of the model, the specifics of its design, and the results of a midterm and one-year postintervention survey</p>	<p>Students and preceptors involved in this model identified several advantages to the program, including increased student accountability, enhanced socialization into the profession, improved learning, and reduced teaching burden on preceptors. An additional benefit of the CLDM is that students form a learning community and collaborate with preceptors to care for women in busy clinical settings. Challenges of the model will also be discussed.</p>	<p>Low</p>
<p>second and third year students</p>	<p>A midwifery undergraduate programme in one university in the North West of England</p>			<p>Interviews were analysed using interpretative phenomenological analysis</p>	<p>The study found five themes related to what the students found traumatic</p>	<p>Low Darra, S; Clark, N</p>

Darra, S; Clark, N	Midwifery Lecturers' views of shortened midwifery programmes in the UK	2017	Evidence Based Midwifery	UK	Midwifery	Exploratory descriptive design using an online survey with 12 questions was used	Lite and 62 lec UK
Doolen, Jessica, Bette Mariani, Teresa Atz, Trisha Leann Horsley, Jennifer O'Rourke, Kelley McAfee	High-Fidelity Simulation in Undergraduate Nursing Education: A Review of Simulation Reviews	2016	Clinical Simulation in Nursing	USA	Nursing	Literature Review	7 r
Ebert, Lyn; Tierney, Olivia; Jones, Donovan	Learning to be a midwife in the clinical environment; tasks, clinical practicum hours or midwifery relationships	2016	Nurse Education in Practice	Australia	Midwifery	Discussion paper	
European Commission	Evaluation of the Professional Qualifications Directive 2005/36/EC, Experience reports from with regard to national authorities midwives	2016	European Commission	Europe	Midwifery	Evaluation of EU Directice of 2005	24 Co Au
Factor, E. M. R.; de Guzman, A. B	Explicating Filipino student nurses' preferences of clinical instructors' attributes: A conjoint analysis	2017	Nurse Education Today	Philippines	Nursing	Analysis of experimental vignettes	22 ser stu Ph

literature review and survey of midwifery educators in the UK			The key concepts of interest were: the preparedness and commitment of students applying to the short programme; their numerical and writing skills; transition to the role of the midwife; transferable nursing skills; and attrition.		Students on the shortened programme were generally thought to be prepared for and committed to midwifery	Moderate
reviews		The use of high-fidelity simulation in undergraduate nursing education in the USA			Findings from simulation research and reviews revealed significant differences in design and assessment methods leading to a wide variety of measurement outcomes and a variety of limitations. The review suggests a need for methodologically sound research that translates simulation outcomes to future performance and practice.	Low
	Midwifery education in Australia	Discussion around the number of and type of clinical experiences required to ensure that graduates of the Australian Bachelor of Midwifery become competent midwifery graduates.			To date, there is no evidence that a set number of experiences or hours ensures professional competence in the clinical environment	Low
EU competent authorities	Midwifery pre-registration education in the EU		Experience reports submitted by national midwifery authorities			High
7 junior and senior nursing students in Philippines	A comprehensive university in the Philippines	Nursing students' perceptions of the attributes of an effective clinical instructor		Conjoint analysis of students' responses to vignettes	Student nurses' preferred attributes in clinical instructors were 1) clinical teaching capacity, followed by 2) interpersonal relationship and caring behavior	Moderate

Fagan, A; Lea, J; Parker, V	Conflict, confusion and inconsistencies: Pre-registration nursing students' perceptions and experiences of speaking up for patient safety	2020	Nursing Inquiry	Australia	Nursing	Two-phased qualitative study	53 nur
Fealy, Shanna; Jones, Donovan; Hutton, Alison; Graham, Kristen; McNeill, Liz; Sweet, Linda; Hazelton, Michael	The integration of immersive virtual reality in tertiary nursing and midwifery education: A scoping review	2019	Nurse Education Today	n/a	Both	Scoping review	2 a
Flott, Elizabeth A; Linden, Lois	The clinical learning environment in nursing education: a concept analysis	2016	Journal of Advanced Nursing	n/a	Nursing	Literature review and concept analysis	Un
Forsman, Henrietta; Jansson, Inger; Leksell, Janeth; Lepp, Margret; Sundin Andersson, Christina; Engström, Maria; Nilsson, Jan	Clusters of competence: Relationship between self-reported professional competence and achievement on a national examination among graduating nursing students	2020	Journal of Advanced Nursing	Sweden	Nursing	Cross-sectional study combining survey data and results from a national examination	17 nur in 3
Gilkison, Andrea; Pairman, Sally; McAra-Couper, Judith; Kensington, Mary; James, Liz	Midwifery education in New Zealand: Education, practice and autonomy	2016	Midwifery	New Zealand	Midwifery	Discussion paper	
González-Chordá, Víctor Manuel; Maciá-Soler, María Loreto	Evaluation of the quality of the teaching-learning process in undergraduate courses in nursing	2015	Revista Latino-Americana de Enfermagem	Spain	Nursing	Prospective longitudinal study	60 nur at a uni

Australian nursing students		Students' perceptions and experiences of speaking up for patient safety		Interpretive Description	Students experience frustration and anxiety when they witness inconsistencies between what is taught at university and performed in practice. The clinical environment culture also influences students' decisions to speak up or remain silent	Moderate
Articles	Immersive virtual reality			506 articles identified and subjected to level one and level two screening	There is currently a paucity of quality published literature on the application and/or integration of immersive virtual reality into nursing and midwifery tertiary education.	Moderate
Known		Investigation of the clinical learning environment		Walker and Avant's concept analysis method	The clinical learning environment contains four attribute characteristics affecting student learning experiences. These include: (1) the physical space; (2) psychosocial and interaction factors; (3) the organizational culture and (4) teaching and learning components.	High
9 final-year nursing students Sweden	2 universities and 1 university college in Sweden	To explore correlation between graduating nursing students' self-reported professional competence and their achievement on a national examination	Students' self-reported professional competence compared against their achievement on a national examination	Students self-assessed their competence using the Nurse Professional Competence Scale; self-assessed competency ratings were then compared against performance in a national examination	The study illustrates how nursing students' self-assessed competence might differ from competency assessed by examination, which is challenging for nursing education	Moderate
	Midwifery education in New Zealand	An overview of New Zealand's midwifery education model and how it is integrated with New Zealand's unique midwifery service				Low
second-year nursing students at a Spanish university	Universidad Jaume I, Spain	To identify areas of the teaching-learning process at this Spanish University that could be improved		Descriptive and inferential analysis of student performance data derived from the tools that evaluated the acquisition of skills by undergraduate students of Nursing (Guide of Evaluation of Clinical Practices (GEPC))	9 learning activities were identified which did not meet the established quality indicators	Moderate

Hayden, Jennifer K; Smiley, Richard A; Alexander, Maryann; Kardong-Edgren, Suzan; Jeffries, Pamela R	Advancing Nursing Excellence for Public Protection The NCSBN National Simulation Study: A Longitudinal, Randomized, Controlled Study Replacing Clinical Hours with Simulation in Prelicensure Nursing Education	2014	Journal of nursing regulation	USA	Nursing	Longitudinal, randomised control study	66
Health Education England	NHS Staff and Learners' Mental Wellbeing Commission	2019	Health Education England	UK		Commission on mental health of NHS staff and learners	No
Henriksen, J; Anna Löfmark; Eivor Wallinvirta; Þóra Jenný Gunnarsdóttir; Áshild Slettebø	European Union directives and clinical practice in nursing education in the Nordic countries	2019	Nordic Journal of Nursing Research	Nordic Countries	Nursing	Discussion paper	
Hernández-Quevedo, C; Moreno-Casbas, MT.	Strengthening health systems through nursing: Evidence from 14 European countries - 12. Spain	2019	The European Observatory on Health Systems and Policies	Spain	Nursing	Discussion paper	
Hickerson, Kirsten A; Taylor, Laura A; Terhaar, Mary F	The preparation–practice gap: An integrative literature review	2016	Journal of Continuing Education in Nursing	n/a	Nursing	Literature review	50 inc
Hing Yu So, Phoon Ping Chen, George Kwok Chu Wong, Tony Tung Ning Chan	Simulation in Medical Education	2019	Journal of the Royal College of Physicians of Edinburgh	n/a	Both	Discussion and descriptive analysis	Lite - 3

6 American nursing students	10 pre-licensure nursing programmes across USA; study conducted over 3 academic years and first 6 months' of graduates' clinical practice	Replacement of clinical hours with simulation in prelicensure nursing education	Control: Students who had traditional clinical experiences with no more than 10% of clinical hours could be spent in simulation; 25% group: Students who had 25% of their traditional clinical hours replaced by simulation; 50% group: Students who had 50% of their traditional clinical hours replaced by simulation.		At the end of the nursing program, there were no statistically significant differences in clinical competency as assessed by clinical preceptors and instructors; there were no statistically significant differences in comprehensive nursing knowledge assessments; and there were no statistically significant differences in CLEX® pass rates among the three study groups	High
not specified		Mental health of NHS staff and learners				Moderate
		Discussion of the challenges presented by EU requirements to clinical practice in nursing education in the Nordic countries		Systematic and thorough review and evaluation of EU directives 2005/36/EC1 and 2013/55/EU,2 which regulate nursing education in the Nordic countries	There are several consequences and challenges for nursing education in the Nordic countries when meeting the EU directives for clinical practice	Moderate
	Nursing education in Spain	Overview of nursing education in Spain				Moderate
studies included		Collating evidence on the existence, extent, and significance of a preparation-practice gap			Three main themes permeate the evidence: a preparation-practice gap exists; this gap is costly; and closing the preparation-practice gap will likely rely on changes in undergraduate education and on-the-job remediation (i.e., nurse residency or preceptor programs).	High
literature review 6 references	The use of simulation learning and discussion on different modalities				Although more research and validation are required to facilitate general acceptance of simulation for assessment, we have already witnessed increasing utilisation of simulation in credentialing and certification processes in healthcare.	Moderate

Hultsjö, S; Bachrach-Lindström, Margareta; Safipour, J; Hadziabdic, E	“Cultural awareness requires more than theoretical education” - Nursing students' experiences	2019	Nurse Education in Practice	Sweden	Nursing	Qualitative study using focus groups	12 nur
Humar, L; Sansoni. J	Bologna Process and Basic Nursing Education in 21 European Countries	2017	Annali di igiene	Europe	Nursing	Mapping exercise	30 cou sur que dis em nur ass reg bo con rec
Jiménez-Rodríguez, D; Arrogante, O	Simulated Video Consultations as a Learning Tool in Undergraduate Nursing: Students' Perceptions	2020	Healthcare	Spain	Nursing	Qualitative and quantitative survey of student satisfaction	93 stu
Jirwe, Maria; Emami, Azita; Gerrish, Kate	Learning to Nurse in a Multicultural Society-The Experiences of Nursing Students in Sweden	2015	Article in Journal of Nursing & Care	Sweden	Nursing	Qualitative study	10 nur
Kirwan, Marcia; Riklikiene, Olga; Gotlib, Joanna; Fuster, Pilar; Borta, Margareta	Regulation and current status of patient safety content in pre-registration nurse education in 27 countries: Findings from the Rationing - Missed nursing care (RANCARE) COST Action project	2019	Nurse Education in Practice	Various	Nursing	Online consultation	83 cou Tw par con con sur res con ent

Swedish nursing students		Cultural awareness in nursing students in Sweden		Thematic analysis of focus groups	Students are willing to learn more about how to care for people with different cultural backgrounds. However, this learning is not always available in official lecture-based education and most awareness about cultural aspects of healthcare is developed from practice and informal education.	Low
European countries - survey questionnaire distributed by email to the nursing associations/regulatory bodies. 21 survey completions were received				Descriptive with content analysis of open-ended questions		Moderate
nursing students	A university in Spain	Undergraduate nursing students' satisfaction and perceptions about simulated video consultations using the high-fidelity simulation methodology		Students used survey to rate their satisfaction with the simulated video consultations	The majority of students expressed a high overall satisfaction with simulated video consultations	Moderate
final-year nursing students	A university in Sweden: 5 participants were from a Swedish background and 5 from an immigrant background	To examine nursing students' preparation for and experience of cross-cultural encounters	Swedish-born students' experiences of cross-cultural encounters were compared against experiences of students from immigrant backgrounds	Semi-structured interviews were undertaken and analysed using 'framework' approach	Although nursing students felt nursing education had equipped them with the necessary selfawareness, knowledge and skills to face cross-cultural encounters, nursing education had failed in preparing students to deal with negative attitudes, racism and discrimination	Low
HEIs from 27 countries. Twenty-two partially completed the consultation survey, and 61 respondents completed the entire survey					The topic of patient safety is generally not explicitly taught, rather it remains a hidden element within the curriculum	Moderate

Kunst, Elicia L., Amanda Henderson, Amy N. B. Johnston	A Scoping Review of the Use and Contribution of Simulation in Australian Undergraduate Nurse Education'	2018	Clinical Simulation in Nursing	Australia	Nursing	Literature Review	44
Kurtz D. L. M. et al.	Health Sciences cultural safety education in Australia, Canada, New Zealand, and the United States: a literature review	2018	International Journal of Medical Education	Australia	Both	Literature review	158 and article review selected included
Landeen, Janet; Carr, Donna; Culver, Kirsten; Martin, Lynn; Matthew-Maich, Nancy; Noesgaard, Charlotte; Beney-Gadsby, Larissa	The impact of curricular changes on BSCN students' clinical learning outcomes	2016	Nurse Education in Practice	Canada	Nursing	Descriptive qualitative study	25 months scholarship when BSCN
Lendahls, Lena; Oscarsson, Marie G	Midwifery students' experiences of simulation- and skills training	2017	Nurse Education Today	Sweden	Midwifery	Group interviews	61 students advanced
León-Larios, F	The Current Situation of Midwives in Spain	2016	Consell de Collegis d'Infermeres i Infermers de Catalunya	Spain	Midwifery	Discussion paper	
Li, J; Lu, H.; Hu, R	A review of the definition and scope of practice of midwives in five representative countries	2018	Frontiers of Nursing	Various	Midwifery	Discussion paper	

articles		Extent, breadth and quality of simulation as a pedagogical tool in Australian nursing education		Scoping Review. A framework of best practice in simulation was synthesized from previously published best practice guidelines and then applied to Australian simulation education described in studies included in the review	Diverse methods in conducting and evaluating simulation education have led to limited evidence of the contribution of simulation education to students meeting their learning outcomes. Robust and authentic evaluation tools linked to professional standards for practice are needed to provide evidence of the unique contribution of simulation.	Moderate
33 abstracts and 122 full-text articles were reviewed with 40 selected for final inclusion		To review the research literature on cultural safety education within post-secondary health science programs.	Differences in coverage of cultural safety education in different countries' education standards	Discussion and consensus to identify thematic linkages of major findings		Moderate
Faculty members at School of Nursing at McMaster University, Ontario, Canada	School of Nursing at McMaster University, Ontario, Canada	To evaluate the impact of curricular changes on students' deep learning	Students' performance assessed before and after curricular changes	Individual interviews and focus groups conducted and analysed using Interpretive Descriptive qualitative research methodology	Faculty described three major themes in students' performance 1) pulling it all together, 2) seeing the whole person, and 3) finding their nursing voices	Moderate Lendahls, Lena; Oscarsson, Marie G
Midwifery students at advanced level		Explore midwifery students' experiences of simulation- and skills training	61 students interviewed in 13 group interview between 2011 and 2015		Simulation- and skills training support the development of midwifery skills.	Low
	Midwifery education in Spain	Overview of midwifery education in Spain				Moderate
		To review the definition and scope of the practice of midwives in Sweden, Finland, the United Kingdom, the United States, and Australia to find models and make suggestions for reforms in the midwifery policies of China.	Comparison of scope of practice of midwives in 5 countries: Sweden, Finland, the United Kingdom, the United States, and Australia			Moderate

MacLaren, Jessica; Haycock-Stuart, Elaine; McLachlan, Alison; James, Christine	Understanding pre-registration nursing fitness to practise processes	2016	Nurse Education Today	UK	Nursing	Semi-structured qualitative interviews	11 in n Sci niv pro pre nur pro
MacLaren, Jessica; Haycock-Stuart, Elaine; McLachlan, Alison; James, Christine	Analysing training in gender-based violence for undergraduate nursing students in Spain: A mixed-methods study	2019	Nurse Education Today	Spain	Nursing	Mixed methods study - systematic review and in-depth interview	Re doc qua inte
Markowski; Marianne; Heather Bower; Ryan Essex; Carole Yearley	Peer learning and collaborative placement models in health care: a systematic review and qualitative synthesis of the literature	2021	Journal of Clinical Nursing	Various	Both	Literature review	47 inc pra ide Pa sar stu edu
Marzalik, Penny R; Karen Johnson Feltham, Karen Jefferson, Kim Pekin	Midwifery education in the U.S. - Certified Nurse-Midwife, Certified Midwife and Certified Professional Midwife	2018	Midwifery	USA	Midwifery	Discussion paper	
Matthew-Maich, Nancy; Martin, Lynn; Ackerman-Rainville, Rosemary; Hammond, Cynthia; Palma, Amy; Sheremet, Darlene; Stone, Rose	Student perceptions of effective nurse educators in clinical practice	2015	Nursing standard (Royal College of Nursing (Great Britain) : 1987)	Canada	Nursing	Mixed methods approach involving online survey and focus groups	51 nur par sur stu par foc
McClelland, Gabrielle Tracy; Horne, Maria; Dearnley, Christine; Raynsford, Justine; Irving, Donna	Experiences and outcomes among undergraduate health professional higher education students with protected characteristics: Disability, gender, and ethnicity	2015	Journal of Psychological Issues in Organizational Culture	UK		Literature review	

academics nine of the 11 Scottish u versities providing pre-registration nursing programmes	Universities in Scotland - academics responsible for fitness to practice processes in pre-registration nursing programmes	Semi-structure qualitative interviews			Diverse fitness to practise processes are currently in place for Scottish pre- registration nursing students. Principles are similar, but terminology differs. Broadly similar issues are arising at Scottish universities.	Moderate
Review of public documents and qualitative interviews	Nursing courses at universities across Spain	To analyse training on gender-based violence that nursing students receive at universities in Spain	Comparison of course content of nursing courses across Spain	Qualitative analysis of the interviews identified two categories -'Supportive legislation and supportive lecturers are essential for integrating gender-based violence training' and ' Approach to gender-based violence shapes the contents and the subject in which it is incorporated'	80% of nursing training programmes included content regarding gender-based violence, although there was great variability in the topics included in the training	Moderate
Articles included for ap- praisal out of 172 identified. Participant sample of 3462 students and educators		Evidence on peer learning and collaborative practice placement models in health care		A systematic search of the literature and qualitative data synthesis using the PRISMA checklist and ENTREQ guidelines.		High
	Midwifery education in USA	Overview of midwifery education in USA	Comparison of education for Certified Nurse-Midwife, Certified Midwife and Certified Professional Midwife			Moderate
11 Canadian nursing students participated in survey; 7 students participated in focus groups	Canadian nursing students enrolled in all four years of the baccalaureate programme	To explore baccalaureate nursing student perceptions of what makes an effective nurse educator in the clinical practice setting and the in- fluence of effective teaching on student experiences		Data from online surveys and focus groups analysed using content analysis	Participants indicated that effective teachers foster positive experiences, motivation, meaningful learning and success. They adjusted to meet individual students' needs at each level of the programme.	High
	Experiences of students with protected characteristics					High

McInnes, S; Halcomb, E. J; Huckel, K; Ashley, C	Experiences of registered nurses in a general practice-based new graduate program: A qualitative study	2019	University of Wollongong Faculty of Science, Medicine and Health	Australia	Nursing	Longitudinal qualitative descriptive study	9 r gra nu and
Miles, David A	Simulation learning and transfer in undergraduate nursing education: A grounded theory study	2018	Journal of Nursing Education	n/a	Nursing	Grounded theory study	
Miller, Jane Lindsay, M. Avery, K. Larson, Anne Woll, Alison VonAchen, Angela Mortenson	Emergency birth hybrid simulation with standardized patients in midwifery education: implementation and evaluation	2015	Journal of midwifery & women's health	USA	Midwifery	Discussion paper	
Miró, J; Castarlenas, E; Solé, E. et al	Pain curricula across healthcare professions undergraduate degrees: a cross-sectional study in Catalonia, Spain.	2019	BMC Medical Education	Spain	Nursing	Cross-sectional survey	55 lea all unc pro Ca uni
Mitchell, Andrew E. P	The perceived psychological stressors and coping behaviours in university students, on a pre-registration programme	2020	The Journal of Mental Health Training, Education and Practice	UK	Nursing	Cross-sectional study	87 reg stu uni

Recently graduated nursing students and 9 mentors	Graduates taking part in a new graduate program within Australian general practice	To explore the experiences of new graduate registered nurses and their registered nurse mentors in a new graduate program within Australian general practice	Views of graduates were compared at 3 intervals throughout the research	Graduates and their mentors were interviewed at 3 separate intervals (beginning of the programme, after 6 months (at the mid-point) after 12 months (the end of the programme)). Interview responses analysed using thematic analysis	Interviews revealed 4 themes: 'Preparation and Opportunities' describes the influence that pre-registration education had on preparing nurses for general practice employment. 'Exceeding Expectations' highlights the positive experiences within the program. 'Program Challenges' draws attention to the difficulties experienced by participants, and 'Future Career Intentions' explores future career plans	Moderate
		To explore the process through which simulated learning transfers to clinical learning		The classical grounded theory method was used to conceptualize the process by which simulation learning transfers to the clinical environment.	Simulation learning enhanced transfer of learning, specifically allowing students to take on the role behaviors of what will be expected of them as a practicing nurse	Moderate
		The implementation and evaluation of a hybrid simulation of emergency birth situations in a graduate midwifery program		In the 2011-2012, nurse-midwifery students twice participated in 2 simulated emergencies -shoulder dystocia and postpartum hemorrhage-using hybrid simulation (a standardized patient paired with a birth task trainer).	Students found the simulations to be realistic. The use of best practices (ie, repetitive practice, team learning, small group debriefing, and large group debriefing) enhanced the quality of the simulation experience and the learners' reflection about their professional skills, strengths, weaknesses, and confidence in managing these 2 obstetric emergencies	Low
10 course leaders from healthcare undergraduate programs in Catalan universities	Survey of course leaders for all subjects on the undergraduate programs in Dentistry, Human Nutrition and Dietetics, Medicine, Nursing, Occupational Therapy, Pharmacy, Physiotherapy, Podiatry, Psychology, and Veterinary Science, in Catalonia, Spain	To study the content of the pain education provided to undergraduates in healthcare and veterinary programs in Spain	Comparison of course content on pain management in a variety of undergraduate courses in healthcare in Catalonia	Descriptive statistical analysis to arrive at percentages of courses with pain content were obtained and the averages of pain content hours for each content category.	There were considerable differences in the number of pain-related hours among disciplines: Nursing reported the highest number of hours, and Psychology the lowest.	High
Pre-registration students at a UK university	Students' perceived stress and coping behaviours		Differences in field and year of study	Bivariate and multivariate analyses		Moderate

Monaghan, Thomas	A critical analysis of the literature and theoretical perspectives on theory–practice gap amongst newly qualified nurses within the United Kingdom	2015	Nurse Education Today	UK	Nursing	Literature review	38
Moncrieff, Gill; MacVicar, Sonya; Norris, Gail; Hollins Martin, Caroline J.	Optimising the continuity experiences of student midwives: an integrative review	2020	Women and Birth	n/a	Midwifery	Literature review	12 inc 82
Montayre, J, et al	New Zealand nursing students' perceptions of biosciences: A cross-sectional survey of relevance to practice, teaching delivery, self-competence and challenges	2019	Nurse Education Today	New Zealand	Nursing	Cross-sectional study	54 stu
Morley, Dawn A; Wilson, Kathy; McDermott, Justin	Changing the practice learning landscape	2017	Nurse Education in Practice	UK	Both	Discussion paper	
Oates, Jennifer; Topping, Alice; Watts, Kim; Charles, Penny; Hunter, Caroline; Arias, Teresa	'The rollercoaster': A qualitative study of midwifery students' experiences affecting their mental wellbeing	2020	Midwifery	UK	Midwifery	A qualitative descriptive study using semi-structured interviews	20 inte
O'Brien, B; Graham, M. M	BSc nursing & midwifery students experiences of guided group reflection in fostering personal and professional development. Part 2.for discussion and innovation section	2020	Nurse Education in Practice	Ireland	Both	Qualitative descriptive approach	Fer 10 thru ada eva and one

articles	The theory-practice gap for newly qualified nurses in the UK	Critical analysis of literature			Newly qualified nurses feel unprepared for practice, lacking confidence in their own abilities	High
studies included out of identified		Barriers and facilitators to optimal learning within continuity experiences		A five-step framework was used to establish the search strategy, screening and eligibility assessment, and data evaluation processes.	Three key themes were identified. A central theme was relationships, which are instrumental in learning within continuity experiences. Conflict or coherence represents the different models of care in which the continuity experience is situated, which may conflict with or cohere to the intentions of this educational model. The final theme is setting the standards, which emerged from the lack of evidence and guidance to inform the implementation of student placements within continuity experiences.	Moderate
0 nursing students		Students' overall perception of biosciences within New Zealand undergraduate nursing programmes	Comparisons of perceptions of students over different year groups	A descriptive, cross-sectional survey on perceptions of New Zealand nursing students on biosciences was undertaken	55% of students preferred biosciences papers be taught classroom – based but using a blended learning delivery instead of an exclusively traditional classroom setting. Overall, students believed biosciences had relevance to the practice of nursing.	Moderate
	Complexities of practice learning that have emerged from educational reform and policy in the UK	Current complexities of practice learning that have emerged from educational reform				Low
qualitative interviews	A midwifery undergraduate programme in one university in the South of England			Two inductive themes were developed from our analysis	The importance of having consistent contact with peers and educators cannot be underestimated	Moderate
feedback from 1 students through an adapted evaluation form and 12 one to one interviews	One-year evaluation with a single cohort of fourth year BSc undergraduate clinical internship students			Burnard's (2001) framework		Moderate

Oducado, Ryan Michael F; Amboy, Mary Kristine Q; Penuela, Ayesha C; BeloDelariarte, Rosana Grace	Correlation Between Theoretical Classroom Instruction and Related Learning Experiences: Evidence From a Philippine Nursing University	2019	International Journal of Scientific & Technology Research	Philippines	Nursing	Descriptive correlational study design	653 stu a 5
Oducado, Ryan Michael; Sotelo, Marianne; Ramirez, Liza Marie; Habaña, Maylin; Belo-Delariarte, Rosana Grace	English Language Proficiency and Its Relationship with Academic Performance and the Nurse Licensure Examination	2020	Nurse Media Journal of Nursing	Philippines	Nursing	Retrospective descriptive correlational study design	14 stu Ph
Onovo, G.	Fundamentals of Nursing Practice and the Culturally Diverse ESL Nursing Students: The Students' Perspectives for Teaching and Learning in Nursing	2019	Teaching and Learning in Nursing	USA	Nursing	Descriptive qualitative study	6 E wh an Nu pro
Pálsdóttir, B. et al	Training for impact: the socio-economic impact of a fit for purpose health workforce on communities	2016	Human Resources for Health	Various	Both	Review article	Ov stra
Patterson, J. et al	Strategies for improving the experiences of Māori students in a blended Bachelor of Midwifery programme	2017	New Zealand College of Midwives Journal	New Zealand	Midwifery	Qualitative study	9 o stu ide Ma

3 nursing students covering 3-year cohort	A university in the Philippines	The relationship between theoretical classroom instruction and Related Learning Experiences (RLE) of nursing students in the Philippines		Pearson's correlation and simple linear regression were used to analyze the data	There exists a significant positive relationship between performance in theoretical classroom instruction and RLE of nursing students.	High
1 nursing students in Philippines	A university in the Philippines	The influence of English language proficiency on the academic performance of students in professional nursing courses and the NLE		Secondary analysis of existing research data sets of 141 nursing students in one nursing school in the Philippines was performed. Pearson's r was used to determine the correlation between variables	There were significant correlations between academic performance and the Verbal Ability subscale of the Nursing Aptitude Test and the three English courses included in the nursing curriculum	Moderate
ESL students who passed Associate Nursing Degree programme		To examine challenges and barriers to ESL students but also to explore what helped these particular students to succeed in their course		Combination of open-ended survey questions and face-to-face interviews	The common challenges encountered by the participants were: language barriers, a lack of faculty support and mentorship, difficulty with teaching and learning styles, and a lack of critical thinking and application skills. Also, difficulty with concepts and applications in clinical practice, and racism and discrimination in the learning environment were contributors to their learning challenges.	Low
Interview of 6 categories		The impact of educating and deploying a fit for purpose health workforce can be challenging to evaluate	Comparison of strategies for maximising deployment of fit for purpose health workforce across 6 countries			Moderate
Out of 22 students who identified as Maori	Midwifery School at Otago Polytechnic in New Zealand	Māori students' experiences of the Bachelor of Midwifery programme		Thematic analysis of qualitative interviews	Maori students appreciated the opportunities afforded by the blended approach to learning but found many elements of the course challenging, including the structure and organisation of the course, the learning and assessment methods and the lack of visibility of Maori culture in the learning environment.	Low

Perkins, C	Enhanced bioscience content is urgently needed in UK pre-registration nursing curricula	2019	Nurse Education in Practice	UK	Nursing	Discussion paper	
Pijl-Zieber, Em M; Barton, Sylvia; Awosoga, Oluwagbohunmi A; Konkin, Jill	Nursing Students Achieving Community Health Competencies through Undergraduate Clinical Experiences: A Gap Analysis	2015	International Journal of Nursing Education Scholarship	Canada	Nursing	Mixed methodology involving qualitative survey and focus groups	Qu sur stu
Plemmons, Christina, Michele Clark, Du Feng	Comparing student clinical self-efficacy and team process outcomes for aDEU, blended, and traditional clinical setting: A quasi-experimental researchstudy	2018	Nurse Education Today	USA	Nursing	Non-equivalent control-group quasi-experimental design	Co sar ent bac nur
Potter, Kara; Hussey, Leslie; Ojeda, Maria	Clinical hours and program types effects on NCLEX pass rates	2021	Teaching and Learning in Nursing	USA	Nursing	Cross-sectional survey of 107 nursing schools in USA	10 nur
Power, Alison	Midwifery in the 21st century: Are students prepared for the challenge?	2016	British Journal of Midwifery	UK	Midwifery	Discussion paper	1 s
Praxmarer-Fernandes, Stefanie; Maier, Claudia Bettina; Oikarainen, Ashlee; Buchan, James; Perfilieva, Galina	Levels of education offered in nursing and midwifery education in the WHO European region: multicountry baseline assessment	2017	Public Health Panorama	Various	Both	Survey of member states in the WHO European Region - semi structured interviews	40 nur cou mic

	Nursing education in the UK	Presenting the case for enhanced bioscience content within UK curricula for nursing				Low
Qualitative survey of 187 students	Participants included 81 senior nursing students who had recent experience of a community health clinical rotation or a final preceptorship in community health, 87 practicing community health nurses, and 19 faculty members teaching community health nursing at baccalaureate level.	Exploring the nature of the gap between observed and desired nursing student competence in community practice settings			All respondent groups report a statistically significant gap between observed level of performance and desired level of performance of students in community health competencies	Moderate
Convenience sample of 272 entry-level baccalaureate nursing students	All second term entry-level baccalaureate nursing students who were attending either a Southwestern state university (DEU model-treatment group) or a Midwestern state university (traditional teaching model control group or a blended model treatment group) were invited to participate.	The effects of 3 different teaching models (dedicated education unit, blended, traditional) on clinical self-efficacy and attitude toward team process	84 students participating in a dedicated education unit model treatment group, 66 students participating in a blended model treatment group, and 122 students participating in a traditional model control group.	Perceived clinical self-efficacy was evaluated by the pretest/posttest scores obtained on the General Self-Efficacy scale. Attitude toward team process was evaluated by the pretest/posttest scores obtained on the TeamSTEPPS® Teamwork Attitude Questionnaire.	Statistical analysis revealed that all three clinical teaching models resulted in significant increases in both clinical self-efficacy and attitude toward team process. However, increases were noticeably higher for students who participated in the dedicated education unit model and in the blended model, compared to students participating in the traditional model	Moderate
7 out of 722 nursing schools		The relationship between clinical hours and NCLEX pass rates		Multiple linear regression analysis	No correlation exists between program type and NCLEX pass rates or the total number of clinical hours in a school and NCLEX pass rates	High
Study	Resilience of student midwives					Very Low
countries for nursing; 41 countries for midwifery			Current levels of education offered for nurses and midwives		The levels of education offered for nurses and midwives vary considerably across the Region	High

Redmond, Catherine; Davies, Carmel; Halligan, Phil; Joye, Regina; Carroll, Lorraine; Frawley, Timothy	Nursing and midwifery students' perception of learning enablers and gains in the first semester of their BSc programmes: A cross sectional study	2018	Nurse Education Today	Ireland	Both	Cross-sectional descriptive study	200 nur mic stu
Roberts, Elizabeth; Kaak, Vera; Rolley, John	Simulation to Replace Clinical Hours in Nursing: A Meta-narrative Review	2019	Clinical Simulation in Nursing	UK and USA	Nursing	Literature review	12 10
Romero-Collado, Angel; Raurell-Torreda, Marta; Zabaleta-del-Olmo, Edurne; Homs-Romero, Erica; Bertran-Noguer, Carme	Course Content Related to Chronic Wounds in Nursing Degree Programs in Spain	2015	Journal of Nursing Scholarship	Spain	Nursing	Cross-sectional descriptive study	An cou
Romero-Collado, Angel; Raurell-Torreda, Marta; Zabaleta-Del-Olmo, Edurne; Rascon-Hernan, Carolina; Homs-Romero, Erica	Nurse prescribing in Spain: The law and the curriculum	2017	Nursing & Health Sciences	Spain	Nursing	Cross-sectional study	All offe in n cou info only

6 first-year nursing and midwifery students	A large urban university in Ireland that provides undergraduate nursing and midwifery degree programmes.	To explore students' perceptions of their learning gains to identify factors that support student learning and identify elements that need improvement		Students answered questions about their perceived learning gains using the Student Assessment of Learning Gains (SALG) questionnaire	Students positively evaluated teaching and learning approaches used. The greatest enablers of learning were clinical skills laboratory small group teaching and support followed by online learning materials and multiple choice formative assessment questions.	Moderate
4 articles out of 4 screened		Substitution of clinical hours with simulation		A metanarrative review method was used as outlined by the RAMESES guidelines.	Studies conducted in the United States and United Kingdom showed that a percentage replacement of clinical placement hours with clinical simulation shows no significant difference to student outcomes in relation to clinical skills and knowledge, and student confidence	Moderate
Analysis of 2,258 courses	114 centers in Spain that offer a nursing degree	To analyze content related to chronic wounds in nursing degree programs in Spain		Course descriptions available for online access during June and July of 2012 were reviewed for the 114 centers in Spain that offer a nursing degree, according to the official Registry of Universities, Centers, and Titles	In 60 (63.1%) of these centers, none of the courses included the concept of pressure ulcer prevention, and the course content posted by 36 (37.9%) centers made no mention of their treatment. None of the course descriptions contained any reference to pain management in patients with chronic wounds.	High
Centres offering a degree in nursing with course information online		Course content related to pharmacology in all nursing degree programs in Spain			All centers offered at least one pharmacology course. One-third of the required courses had content related to pharmacology and healthcare products/supplies.	Moderate

Rowbotham, Melodie, Rachel M Owen	The effect of clinical nursing instructors on student self-efficacy	2015	Nurse Education in Practice	USA	Nursing	Descriptive Study	239 stu
Ryan, L; Jackson, D; Woods, C; Usherab, K	Pre-registration nursing students' perceptions and experience of intentional rounding: A cross-sectional study	2020	Nurse Education in Practice	UK	Nursing	Cross-sectional study	Pre nu cor Nu Pe Pa Sc Au Jur
Ryan, Liz; Jackson, Debra; Woods, Cindy; East, Leah; Usher, Kim	Preregistration nursing students' provision of safe care—Are we leaving too much to chance?	2020	Journal of Clinical Nursing	UK	Nursing	Literature review and discussion	
Sarmiento, C. et al	Assessment practices in Philippine higher STEAM education	2020	Journal of University Teaching & Learning Practice	Philippines	Both	Qualitative study	Da fro Ph
Schwartz, S	Educating the Nurse of the Future: Report of the Independent Review of Nursing Education	2019	Department of Health, Commonwealth of Australia	Australia	Nursing	Report of an independent review	
Sherwood, Rebecca J; Francis, Gary	The effect of mannequin fidelity on the achievement of learning outcomes for nursing, midwifery and allied healthcare practitioners: Systematic review and meta-analysis	2018	Nurse Education Today	UK	Both	Systematic literature review	18 qu ime con par

6 BSN students	Students attending a Midwestern USA comprehensive masters university	To explore the relationship between perceived instructor effectiveness and student self-efficacy	Comparison of lower- and higher-efficacy learning groups	Data were collected from students using the Nursing Clinical Teacher Effectiveness Inventory (NCTEI) and the student self-efficacy (SSE) questionnaire. Data was analyzed using Pearson's correlation and MANCOVA.	Results showed that students from the higher self-efficacy group (i.e. those who were grouped according to the SSE questionnaire as exhibiting higher levels of self-confidence) scored 'evaluation' higher than lower self-efficacy students. This means that, for students with higher levels of self-efficacy, the evaluations they received from their clinical supervisors increased their clinical self-confidence. Students with high self-efficacy reported faculty who suggested ways to improve, identified strengths and weaknesses, observed frequently, communicated expectations, gives positive reinforcement and corrects without belittling.	Moderate
Pre-registration nursing students completed the nurses' perceptions of patient rounding intervention between August 2017–June 2018	Multisite study	Online survey and email		Strobe reporting guidelines were used to report findings	Participants perceived positive benefits in intentional rounding for nurses and patients	High
	The theory practice gap in nursing education					Moderate
Data gathered from 103 HEIs in Philippines		To explore the practices of higher education Philippine STEAM educators in assessing learners.		Data sourced from the database of a state-funded research on Philippine STEAM education using a Classroom Observation Protocol, included 106 STEAM teachers from purposely selected institutions drawn from 14 regions	Systematic data analysis (through data condensation, data display, and drawing and verifying conclusions) revealed that STEAM teachers used both appropriate traditional and authentic assessment tools and strategies with inclusive integration of technology	Moderate
	Report of the Independent Review of Nursing Education in Australia					High
RCTs and quasi-experimental trials containing 1192 participants					Higher-fidelity mannequins exhibited modest advantages when testing closely followed training.	High

Shin, Sujin; Park, Jin-Hwa; Jung-Hee Kim	Effectiveness of patient simulation in nursing education	2015	Nurse Education Today	Various	Nursing	Meta analysis	20
Shivers, Eleanor; Hasson, Felicity; Slater, Paul	Pre-registration nursing student's quality of practice learning: Clinical learning environment inventory (actual) questionnaire	2017	Nurse Education Today	Northern Ireland	Nursing	Descriptive, cross-sectional online survey	CL que res by stu in a unc nur
Smeds Alenius, Lisa; Rikard Lindqvist, and Carol Tishelman.	Strengthening health systems through nursing: Evidence from 14 European countries - 13. Spain	2019	The European Observatory on Health Systems and Policies	Sweden	Nursing	Discussion paper	
Smiley, Richard A	Survey of Simulation Use in Prelicensure Nursing Programs: Changes and Advancements, 2010-2017	2019	Journal of Nursing Regulation	USA	Nursing	Cross-sectional study	All nur edu pr U.S.

studies	Effects of patient simulation in nursing education				Significant post-intervention improvements in various domains for participants who received simulation education compared to the control groups	High
ELI questionnaire responded to 147 nursing students enrolled in an undergraduate nursing degree	All adult and mental health nursing students enrolled on a BSc (Hons) programme at a UK university - 152 questionnaires completed		A range of placement areas include, Community, Hospital, Learning Disability and Mental Health, Community Public Health, Critical care, Perioperative care, Public Health, Continuing Care and Chronic Illness, Multi-disciplinary Team Assessment and Rehabilitation, and Management.	Results were collected using QUALTRICS and analysed using SPSS		Moderate
	Nursing education in Sweden	Overview of nursing education in Sweden				Moderate
prelicensure nursing education programs in the USA	Survey sent to all prelicensure nursing education programs in the USA	Evaluative follow-up study sought to update the current simulation landscape in prelicensure programs, compare results between 2017 and 2010, and determine the impact of the National Simulation Study and National Council of State Boards of Nursing's National Simulation Guidelines		Survey sent to all prelicensure nursing education programs in the USA	High-fidelity simulation use in undergraduate courses increased substantially during the 7-year period, and computer-based simulation use decreased for all courses except for psychiatric/mental health nursing. Most nursing programs substitute simulation for clinical hours using a 1:1 ratio of simulation to clinical hours.	High

Soler, Olga Mestres; Aguayo-González, Mariela; Gutiérrez, Sabina San Rafael; Pera, Miguel Jiménez; Leyva-Moral, Juan M.	Nursing Students' Expectations of their First Clinical Placement: A Qualitative Study	2020	Nurse Education Today	Spain	Nursing	Qualitative study	15 nur
Spector, Nancy; Janice I. Hooper; Josephine Silvestre and Hong Qian	Board of Nursing Approval of Registered Nurse Education Programs	2018	Journal of Nursing Regulation	USA	Nursing	Discussion paper	
Stomski, N, et al	The influence of situation awareness training on nurses' confidence about patient safety skills: A prospective cohort study	2018	Nurse Education Today	Australia	Nursing	Cross-sectional survey	A c sar com yea stu We uni
Suarez-Garcia, Jose Maria; Maestro-Gonzalez, Alba; Zuazua-Rico, David; Sánchez-Zaballos, Marta; Mosteiro-Diaz, Maria Pilar	Stressors for Spanish nursing students in clinical practice	2018	Nurse Education Today	Spain	Nursing	Cross-sectional descriptive study	45 stu Sp uni

second-year nursing students	Second-year nursing students studying at a Spanish public university	To explore nursing students' expectations before the start of their first clinical placement		Data were collected through a semi-structured interview before the start of the first clinical placement. The data were analyzed using thematic analysis, as proposed by Braun and Clarke.	176 codes were identified, grouped into 3 categories: a) Expectations of clinical placements: this category highlighted the desire to learn, to integrate theory into practice, to feel fulfilled and students' observation that they lacked knowledge of the role of family and community nurses. b) Motivations to attend clinical placement, commitment, and willingness to learn. c) Personal weaknesses, such as insecurity and inexperience, especially regarding techniques and procedures.	Low
		The article discusses key regulatory components of RN education programs, discusses the BON approval process of RN education programs				Moderate
convenience sample comprising final year nursing students at a Western Australia university	Participants were enrolled from a convenience sample comprising final year nursing students at a Western Australia university	To: 1) understand final year nursing students' confidence in their patient safety skills; and 2) examine the impact of situation awareness training on final year nursing students' confidence in their patient safety skills.	Comparison of students' self-perceptions of patient safety skills before and after situation awareness training.	Students self-reported their confidence in patient safety skills, using the Health Professional in Patient Safety Survey, before and after the delivery of a situation awareness educational intervention.	No significant differences in confidence about patient safety skills were identified within settings (class/clinical). However, confidence in patient safety skills significantly decreased between settings i.e. nursing students lost confidence after clinical placements	Moderate
10 nursing students at a Spanish university	two nursing colleges of the University of Oviedo	Stress in clinical practice		Students filled in KEZKAK questionnaire, a validated scale adapted to Spanish nursing students. It is composed of 41 items using a 4-point Likert scale, rating how much the described situation worries them from 0 ("Not at all") to 3 ("A lot").	Nursing students, particularly women, see clinical practice as "rather stressful", with the main stressors being those related to causing harm to patients.	Moderate

Sullivan, Nancy; Swoboda, Sandra M; Breymer, Tonya; Lucas, Laura; Sarasnick, Janice; Rutherford-Hemming, Tonya; Budhathoki, Chakra; Kardong-Edgren, Suzan (Suzie)	Emerging Evidence Toward a 2:1 Clinical to Simulation Ratio: A Study Comparing the Traditional Clinical and Simulation Settings	2019	Clinical Simulation in Nursing	USA	Nursing	Multicenter observational study	42 stu
Sunderland, Ann; Nicklin, Jane; Martin, Andrew	Simulation and Quality in Clinical Education	2017	Open Medicine Journal	UK		Discussion paper	
Taylor, V; Ashelford, S; Fell, P; Goacher, P, J	Biosciences in nurse education: is the curriculum fit for practice? Lecturers' views and recommendations from across the UK	2015	Journal of Clinical Nursing	UK	Nursing	Survey of lecturers teaching biosciences to nursing students in the UK	10 que
Tella, Susanna; Nancy-Jane Smith; Pirjo Partanen; David Jamookeeah; Marja-Leena Lamidi; Hannele Turunen	Learning to ensure patient safety in clinical settings: comparing Finnish and British nursing students' perceptions	2015	Journal of Clinical Nursing	Britain and Finland	Nursing	Comparative study	199 stu Bri
Ubas-Sumagasyay, N. A; Oducado, R. M. F	Perceived competence and transition experience of new graduate Filipino nurses	2020	Jurnal Keperawatan Indonesia	Philippines	Nursing	Cross-sectional study	79 nu
Vermeulen, Joeri; Luyben, Ans; Jokinen, Mervi; Matintupa, Eva; O'Connell, Rhona; Bick, Debra	Establishing a Europe-wide foundation for high quality midwifery education: The role of the European Midwives Association (EMA)	2018	Midwifery	Europe	Midwifery	Discussion paper by the EMA	

US nursing students		Use of simulation in clinical practice	Comparison of students' experiences in traditional clinical settings and simulation settings	Comparison of traditional clinical to simulation on the type, number, and level of educational activities as determined by Miller's Pyramid.	The intensity and efficiency of simulation was demonstrated through the completion of more activities in higher levels of Miller's Pyramid in significantly less time than clinical providing emerging evidence toward a 2:1 clinical to simulation ratio.	Moderate
	Simulation-based education guidelines and standards in UK	To summarise the importance of quality within clinical SBE and how it can be achieved and maintained to produce a measurable impact on patient care			There is a clear need for the development of national standards for SBE delivery and for a stepped approach [i.e. minimum, intermediate, and advanced standards] depending on the size, capacity, and frequency of SBE education delivery.	Moderate
Questionnaires	UK higher education institutions involved in nursing education		The biosciences component of preregistration nursing programmes in higher education institutions across the UK through the experiences and perceptions of lecturers involved in nursing education.	Descriptive statistics and thematic analysis	Lecturers reported that the hours of taught biosciences ranged from 20-113 hours, principally within the first year. This represents between 0.4-2.4% of time within a preregistration nursing programme (4600 hours).	Low
5 Finnish students and 158 British students			Perceptions of patient safety in clinical settings			High
Newly licenced nurses		Self-assessed/perceived competence of new graduate Filipino nurses		Respondents self-assess their own competence levels. Analysis of survey responses using descriptive statistics	New graduate nurses in the Philippines generally had high levels of self-reported fundamental nursing skills and core competence	Moderate
	Impact of the EU Directive on midwifery education					High

Warren, Jessie N; Luctkar-Flude, Marian; Godfrey, Christina; Luke-wich, Julia	A systematic review of the effectiveness of simulation-based education on satisfaction and learning outcomes in nurse practitioner programs	2016	Nurse Education Today	USA	Nursing	Literature review	10 con US 200
Webb, Sara S; Skene, Esther R; Manresa, Margarita; Percy, Elizabeth K; Freeman, Robert M; Tincello, Douglas G	Evaluation of midwifery pelvic floor education and Training across the UK and Spain	2021	European Journal of Obstetrics and Gynecology and Reproductive Biology	Spain	Midwifery	Cross-sectional survey	71 38 mic diff uni reg and
Webster, Alanna; Bowron, Caitlin; Matthew-Maich, Nancy; Patterson, Priscilla	The effect of nursing staff on student learning in the clinical setting	2016	Nursing standard (Royal College of Nursing (Great Britain) : 1987)	Canada	Nursing	Qualitative study	30 stu inte ind foc
Wells, John S. G	Brexit in the “International Year of the Nurse and Midwife” and its implications for nursing in the European Union	2020	Journal of Nursing Management	UK	Nursing	Discussion paper	
Willis, L	Raising the Bar, Shape of Caring: A Review of the Future Education and Training of Registered Nurses and Care Assistants’,	2015	Health Education England	UK	Nursing	Review of education and training of registered nurses and care staff	
Willman, Anna; Bjuresäter, Kaisa; Nilsson, Jan	Insufficiently supported in handling responsibility and demands: Findings from a qualitative study of newly graduated nurses	2020	Journal of Clinical Nursing	Sweden	Nursing	Qualitative study	16 gra Sw wit wo exp acu hos
Willman, Anna; Bjuresäter, Kaisa; Nilsson, Jan	Newly graduated nurses’ clinical competencies and need for further training in acute care hospitals	2020	Journal of Clinical Nursing	Sweden	Nursing	Cross-sectional-study	85 ha con wo dire car

studies conducted in USA between 2007 and 2014		To collate evidence on the effectiveness of High-fidelity simulation in nurse practitioner education programmes	Comparison of 10 studies conducted in USA	Joanna Briggs Institute systematic review methodology was utilized	There is limited evidence supporting the use of HFS within NP programs.	Moderate
1 student and 4 registered midwives across different universities and regions in the UK and Spain	UK and Spain	Education and training of student and registered midwives in pelvic floor examinations	Spanish students' confidence levels compared against UK students	Participants self-assessed their knowledge and confidence in pelvic floor examinations and episiotomies	There is a considerable deficit in the current training practices for midwives regarding episiotomies	High
nursing students were interviewed individually or in focus groups		To explore baccalaureate nursing students' perspectives of the influence of nursing staff on their learning and experience in the clinical setting		Content analysis was used to analyse focus group responses	Nursing staff had positive (enabling) and negative (hindering) effects on students' clinical learning and socialisation to nursing.	Moderate
		Impact of Brexit on the supply of nurses and midwives from EU				Low
		Recommendations to ensure that nurses and care assistants receive consistent high quality education and training which supports high quality care over the next 15 years			The review set out 34 recommendations to improve the education and training of nurses and care assistants	High
newly graduated Swedish nurses with 6 months' worth of clinical experience in an acute care hospital setting		To explore newly graduated registered nurses' experiences and how they manage complex patient situations		Focus groups were conducted and responses analysed using qualitative content analysis	New nurses do not feel sufficiently prepared or supported to meet the demands of complex patient situations in acute care clinical settings	Low
NGRNs who had recently commenced working with acute patient care	Participants were working at 3 hospitals in central Sweden	Self-reported clinical competence of newly graduated registered nurses (NGRNs) working in Swedish acute care hospital settings.		Data were collected using the 50-item ProffNurse SAS II. The STROBE cross-sectional reporting guidelines were used.	The NGRNs assessed their clinical competence as being highest in areas relating to team collaboration and ethics and lowest in areas relating to professional development and direct clinical practice.	Moderate

Wood, AF; Chandler, C; Connolly, S; Finn, G; Redmond, C; Jolly, J; Powell, A; Davies, C; Grant, A	Designing and developing core physiology learning outcomes for pre-registration nursing education curriculum	2020	Advances in physiology education	UK	Nursing	Modified Delphi approach	An par Bic Nu gro a li 19 out wa uni tea (n= 22 rat
Woon, Adele Pei Ning; Mok, Wen Qi; Chieng, Ying Jia Shermin; Zhang, Hui Min; Ramos, Patricia; Haryani Binte Mustadi; Ying Lau	Effectiveness of virtual reality training in improving knowledge among nursing students: A systematic review, meta-analysis and meta-regression	2021	Nurse Education Today	n/a	Nursing	Literature Review	14 inc 19 ide
Ypma, Patricia; Domínguez Gaitán, María; Ongono Pomme Alexandra' Drevon, Célia; Papadopoulos, Irena	Mapping and assessment of developments for one of the sectoral professions under directive 2005/36/EC - nurse responsible for general care (No 711/PP/GRO/ IMA/18/1131/11026), Final study	2020	European Commission	Europe	Nursing	Mapping developments of the nursing profession against the EU Directive requirements	Lite des and con
Zambas, S. I; Dutch, S; Gerrard, D	Factors influencing Māori student nurse retention and success: An integrative literature review	2020	Nurse Education Today	New Zealand	Nursing	Literature review	13 inc the
Zwedberg, Sofia; Barimani, Mia; Jonas, Wibke	Exploring the internship experiences of Swedish final term student midwives: A cross-sectional survey	2020	Sexual and Reproductive Healthcare	Sweden	Midwifery	Cross sectional-study	10 Sw mic stu con sur

expert panel from the science in Nurse Education group modified list of 360 to 5 proposed outcomes; this was circulated to universities who teach nursing (n=65) with a 75% response rate					The panel reviewed the modifications, and 182 outcomes were circulated in the second questionnaire (response rate 23%), and further panel review resulting in 177 outcomes agreed	Low
13 trials were included out of 93 records identified		Effectiveness of virtual reality (VR) training in improving knowledge among nursing students		Meta-analysis and random-effects meta-regression was performed using the Comprehensive Meta-analysis 3.0 software	Meta-analysis demonstrated a significant improvement in knowledge, with a small-to-medium effect (g = 0.47) in the VR group compared to the control group (Z = 2.66, p = 0.01). Subgroup analyses highlighted that VR training was more efficacious in delivering procedural knowledge to undergraduate nursing students when conducted in multiple, self-guided, short sessions within 30 min and by using low-moderate level of immersion.	High
literature review, desk research and stakeholder consultation	Assessment of whether it would be appropriate to update the minimum knowledge, skills and training subjects under the Directive					High
13 studies included in thematic analysis		To explore the factors affecting retention and success of Māori undergraduate nursing students in New Zealand.		A Kaupapa Māori research framework was utilised within an integrative review design	Māori student identity, institutional support factors and programme factors play a role in Māori student success and retention	Moderate
13 final-year Swedish midwifery students completed the survey	The survey was distributed to 288 final-year midwifery students at all Swedish universities offering the midwifery programme	Experiences of final term midwifery students in Sweden on their clinical internships		Thematic analysis of survey responses	Students described the internship as an intense, high-pressured and often stressful experience, for which many did not feel adequately prepared	Moderate

Endnotes

¹European Commission (2020) 'User Guide Directive 2005/36/EC, All you need to know about recognition of professional qualifications': <https://ec.europa.eu/docsroom/documents/40185>

²Medical doctors, Dentists, Pharmacists, Physiotherapists

³Ireland, Sweden, Spain, Canada, Australia, New Zealand, USA, The Philippines

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⁵Darra, S. & Clark, N. (2017). Midwifery Lecturers' views of shortened midwifery programmes in the UK. Evidence Based Midwifery, 15(3), 76-82.

⁶European Commission (2016) 'Evaluation of the Professional Qualifications Directive 2005/36/EC'

⁷Communication, using and applying research, evidence-based practice, promoting and supporting breastfeeding, medicines administration and optimisation are all highlighted in NMC's most recent Standards of Proficiency for Midwives: NMC, 2019, Standards of Proficiency for Midwives: <https://www.nmc.org.uk/globalassets/sitedocuments/standards/standards-of-proficiency-for-midwives.pdf>

⁸Vermeulen, J et al, 'Establishing a Europe-wide foundation for high quality midwifery education: The role of the European Midwives Association (EMA)', Midwifery 64 (2018) pp. 128-131

⁹Hayden et al, 'The NCSBN National Simulation Study: A Longitudinal, Randomized, Controlled Study Replacing Clinical Hours with Simulation in Prelicensure Nursing Education', Journal of Nursing Regulation, Volume 5, Issue 2, July 2014 Supplement

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¹¹Bowling A, et al (2018) 'No Evidence to Support Number of Clinical Hours Necessary for Nursing Competency', Journal of Pediatric Nursing, Volume 39, March-April 2018, Pages 27-36

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- ¹⁶Sullivan N et al, 'Emerging Evidence Toward a 2:1 Clinical to Simulation Ratio: A Study Comparing the Traditional Clinical and Simulation Settings', *Clinical Simulation in Nursing* (2019) 30, p. 34-41
- ¹⁷Doolen at al, 'High-Fidelity Simulation in Undergraduate Nursing Education: A Review of Simulation Reviews', *Clinical Simulation in Nursing*, Volume 12, Issue 7, P290-302, July 01, 2016.
- ¹⁸Kunst E. L. et al., 'A Scoping Review of the Use and Contribution of Simulation in Australian Undergraduate Nurse Education', *Clinical Simulation in Nursing*, 19, 2018.
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