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Original research

An analysis of the global diversity of midwifery pre-service education pathways

Sarah Neal [a,*], Andrea Nove [b], Sarah Bar-Zeev [c], Sally Pairman [d], Erin Ryan [d], Petra ten Hoope-Bender [e], Caroline SE Homer [f]

[a] Department of Social Statistics and Demography, University of Southampton, Southampton SO17 1BJ, UK
[b] Novametrics Ltd, Duffield, Derby, UK
[c] United Nations Population Fund, Sexual and Reproductive Health Branch, NY, USA
[d] International Confederation of Midwives, The Hague, Netherlands
[e] United Nations Population Fund, Office of Geneva, Geneva, Switzerland
[f] Burnet Institute, Maternal Child and Adolescent Health department, Melbourne, Australia

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ABSTRACT

Background: The development of competent professional midwives is a pre-requisite for improving access to skilled attendance at birth and reducing maternal and neonatal mortality. Despite an understanding of the skills and competencies needed to provide high- quality care to women during pregnancy, birth and the post-natal period, there is a marked lack of conformity and standardisation in the approach between countries to the pre-service education of midwives.

This paper describes the diversity of pre-service education pathways, qualifications, duration of education programmes and public and private sector provision globally, both within and between country income groups.

Methods: We present data from 107 countries based on survey responses from an International Confederation of Midwives (ICM) member association survey conducted in 2020, which included questions on direct entry and post-nursing midwifery education programmes.

Findings: Our findings confirm that there is complexity in midwifery education in many countries, which is concentrated in low -and middle-income countries (LMICS). On average, LMICs have a greater number of education pathways and shorter duration of education programmes. They are less likely to attain the ICM-recommended minimum duration of 36 months for direct entry. Low- and lower-middle income countries also rely more heavily on the private sector for provision of midwifery education.

Conclusion: More evidence is needed on the most effective midwifery education programmes in order to enable countries to focus resources where they can be best utilised. A greater understanding is needed of the impact of diversity of education programmes on health systems and the midwifery workforce.

1. Introduction

The development of competent professional midwives is a pre-requisite for improving access to skilled attendance at birth and reducing maternal and neonatal mortality. Despite an understanding of the skills and competencies needed to provide high quality care to women during pregnancy, birth and the post-natal period, there is a marked lack of conformity and standardisation in the approach between countries to the pre-service education (i.e. education required before entering the workforce) of midwives [1,2]. While there are three main approaches – direct entry (training without first qualifying as a nurse), post-nursing qualification (midwifery education following nursing qualification) and integrated programmes (i.e., where a nursing and midwifery qualification are gained following one combined education programme) - many countries run multiple parallel programmes. Even within the three models there are often different pathways with marked variation in duration of programme, content and qualification awarded [3].

Abbreviations: LMICs, Low- and middle-income countries; ICM, International Confederation of Midwives; SoWMy, State of the World's Midwifery; UK, United Kingdom.

* Corresponding author.
E-mail address: s.neal@soton.ac.uk (S. Neal).

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1.1. How has midwifery education evolved?

Across much of the globe, formal education of professional midwives has been influenced by historical, cultural and ideological factors [4]. Approaches to education have reflected contemporary debate around the role of the midwife and potential conflicts and synergies with medicine and nursing, with marked divergence between countries. This led some countries such as the United Kingdom (UK) to reposition midwives as a nursing specialism, with education at times focussed on post-nursing programmes with an emphasis on pathology and ill health [5]. In contrast, some countries like France maintained the autonomous role of the midwife and developed direct entry education (although their position was challenged in the 1920 s by the development of a nursing qualification which decreased the role of the midwife in hospital-based maternity care) [6,7]. In many low- and middle-income countries (LMICs), initial midwifery education approaches reflected those of their former colonisers. For instance, many former British colonies in Africa focussed initially on post-nursing education producing "nurse-midwives", while former French colonies drew on the direct entry approach [7].

However, towards the end of the 20th century, wider global discourse on birth as a physiological process drove increased focus on direct entry midwifery programmes in countries such as the UK, Australia, Canada and the United States of America [8–11]. Direct entry midwifery also gained ground in LMICs where a shortage of midwives was particularly acute: it was often viewed as a way to increase the size of the workforce, as entrants with appropriate skills and abilities can become accredited midwives without first qualifying as a nurse [8]. Countries such as Ethiopia, Malawi, Ghana and Bangladesh, which originally mostly produced nurse-midwives, introduced or expanded direct entry midwifery programmes [12–14]. This move was to some extent accelerated by the inclusion of skilled attendance at birth as one of the Millennium Development Goal targets [15], which increased demand for an appropriately skilled midwifery workforce.

In some cases, the drive to increase the number of midwives within the workforce has led to an emphasis on quantity rather than quality in terms of education [16]. Recent years have seen several measures and initiatives to try to set international standards for pre-service midwifery education. The most influential of these have been the ICM's Global Standards for Midwifery Education (2011, updated 2013 and 2021)[17,18] and Essential Competencies for Midwifery Practice (2002, updated 2019) [19]. These guidelines present a framework of competencies that define the basic content of pre-service education to enable graduates to practise as competent midwives. The guidelines, which were developed as part of a collaborative process with global experts, do not specify an academic level of qualification: they stipulate that graduates of all pathways should be proficient in the same competencies. They do, however, set a consensus minimum duration of education of 18 months for post-nursing programmes and three years for direct entry programmes [18]. This has been determined as the minimum time required to for students to acquire the knowledge, skills and behaviours to be a competent midwife based on a review of midwifery programmes across a number of contexts.

The aim of this paper is to describe and discuss the diversity of pathways, qualifications, duration of education and public and private sector provision of midwifery education globally, both within and between income groups. We present data from over 100 countries about pre-service midwifery education programmes and pathways based on survey responses from an International Confederation of Midwives (ICM) member association survey conducted in 2020, which included questions on direct entry and post-nursing midwifery education programmes.

2. Methodology

This paper uses data from an ICM survey that collected information from midwives' associations, in consultation with other stakeholders. These data was also used in the State of the World's Midwifery (SoWMy) 2021 report [20] which was launched in May 2021 and led by the United Nations Population Fund (UNFPA) in partnership with the World Health Organization (WHO) and ICM, with the support of 32 partner organizations. The survey data can be accessed from the ICM Midwives Hub platform (https://www.globalmidwiveshub.org/). The basic survey form was developed by ICM as part of their regular member association survey. The SoWMy 2021 team added questions to the basic survey form, using the same questions that were asked for SoWMy 2014. There was no formal testing of the tool because the questions had been used before. The respondents were leaders of professional midwives' associations. The full tool consisted of three sections, of which education was one. All questions in the education section were closed. Initially, no definitions were given of the category bachelor's diploma and certificate and respondents made their own decisions. However, at the data editing stage most respondents were recontacted to clarify definitions in an attempt to attain some consistency across qualification and length of training: Certificate-level programmes were usually obtained through a hospital-based apprenticeship type program whereas a Diploma was usually in a school or university separate to the hospital.

Data were analysed mostly through crosstabulation (with characteristics disaggregated by income grouping) using STATA.

3. Findings

Our study includes a total of 107 countries: 31 were classified as high income, 21 upper middle income, 31 lower middle income and 24 low-income based on 2020 World Bank classifications. This is more than the 80 countries included in the education chapter of the SoWMy 2021 report because our study includes unvalidated data (for SoWMy 2021, data collected from the ICM survey were only included if accompanied by letters of validation from the competent authority for each survey section). A further 15 countries submitted data through the ICM survey but were excluded from our study: 3 were territories not fully recognised by the UN, 10 either reported integrated training (that was not effectively collected as part of the survey, and so therefore couldn't be analysed) or the pathways were unclear or ambiguous, and two because their qualification did not lead to recognition as a midwife.

3.1. Direct and post-nursing entry midwifery education pathways

The ICM survey data indicate that 78% of our sample (83 countries) had at least one direct entry midwifery education pathway. This ranged from 96% in low-income countries, to 61% in high income countries. Lower-middle and upper-middle income countries also had a high proportion of direct entry programmes, with 74% and 86% of countries in these categories respectively reporting them (see Fig. 1). These data

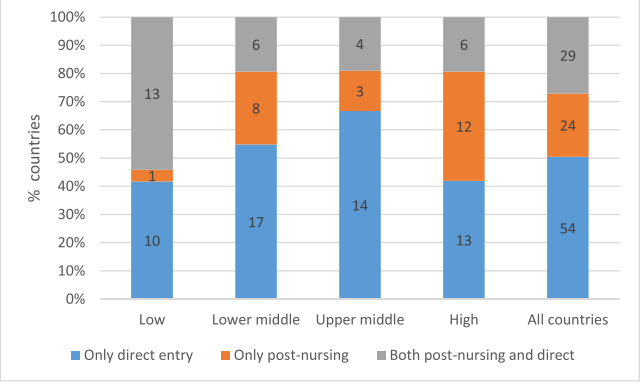


Fig. 1. Available midwifery education pathways, by socio-economic group (n = 107).

suggest that while direct entry programmes are frequently found in all income groups, they are less common in high-income countries. Overall nearly half of all countries reported post-nursing education programmes (53 countries). This was more common in low- and high-income countries compared with the middle-income groups, but high-income countries were much more likely to report them as the only pathway. In low-income countries they were mostly offered in addition to direct entry, with only one country offering only a post-nursing pathway. This indicates greater plurality of education pathways in low-income countries. This may partly reflect the countries that had historically adopted post-nursing education, introducing direct entry pathways in more recent years while maintaining post-nursing options (e.g. Nigeria, Malawi, Tanzania and Ghana) [14].

3.2. Qualifications and pathways – complexity and diversity

The ICM survey recorded the type of qualification that was offered on the direct-entry and post-nursing pathways, indicating whether they were at the level of a Bachelor's degree, a Diploma or another type of certificate. The most commonly offered qualification for both direct-entry and post-nursing programmes was the Bachelor's degree or equivalent (67 countries out of the 83 offering direct entry), and this pattern was seen in all income groups. This suggests that the shift seen in many high income countries of midwifery education moving away from vocational training towards university-based programmes [5] is also common in other settings. A Diploma qualification was the next most common, but was much more prevalent within lower-middle- and low-income countries. Relatively few countries (nine) offered a lower-level Certificate qualification, with over half being low-income countries. A broadly similar but somewhat less marked pattern was seen for post-nursing qualifications, with Bachelor's degrees generally the most common and few programmes at certificate level. Fig. 2 shows the composition of all direct-entry and post-nursing programmes by qualification and income group: it is clear that in lower-middle- and low-income countries a higher proportion of programmes are Diploma or Certificate level for direct entry, but the pattern is less marked for post-nursing, partly due to small numbers.

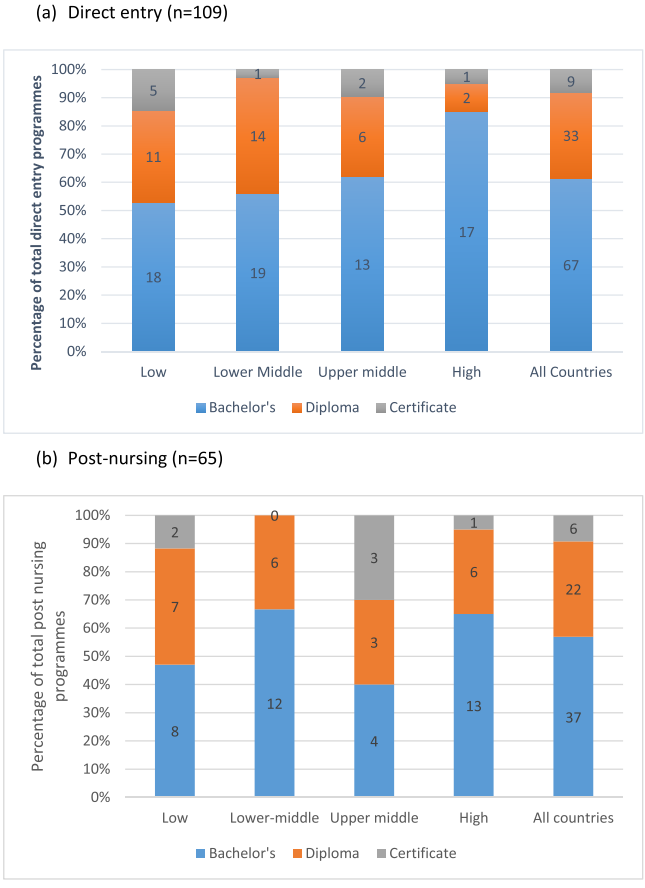


Fig. 2. Qualification gained on (a) direct entry programmes and (b) post-nursing programmes, by income group.

3.3. Multiple qualifications within the direct entry and post- nursing pathways

Fourteen countries reported offering two types of direct entry programme leading to different qualifications (see Table 1): in all cases this is a Bachelor's degree-level qualification with either a Diploma or Certificate qualification in addition. Only one of these is a high-income country. One is a low-income country, and the majority (nine) are lower-middle-income countries. The remaining three are upper-middle-income countries. Six countries offer all three levels of qualification (Bachelor's, Diploma and Certificate): five of these are low-income countries and one is lower-middle-income. Lower-middle- and low-income countries have more numerous pathways and qualifications for direct entry to midwifery. This pattern could reflect two approaches: firstly, programmes may be newly introduced with an aim of rapidly expanding the midwifery workforce or providing skilled care for underserved groups. An example of this approach is in Afghanistan where they had a three-year Institute of Health Science programme available since the 1970 s, and in 2002 they introduced a two-year Community Midwifery Education programme in response to a huge shortage of midwives, particularly in rural areas [21]. An alternative is that countries that have relied on Diploma or Certificate level courses have more recently introduced university-level qualifications: e.g. Rwanda and Indonesia have incrementally increased the highest available academic qualification for nursing and midwifery, while retaining a previous pathway [22].

Twelve of the 53 countries with post-nursing education had more than one qualification, and there was no obvious pattern by country income group.

Table 1
Number of direct and post-nursing qualification types per country by income groupings.

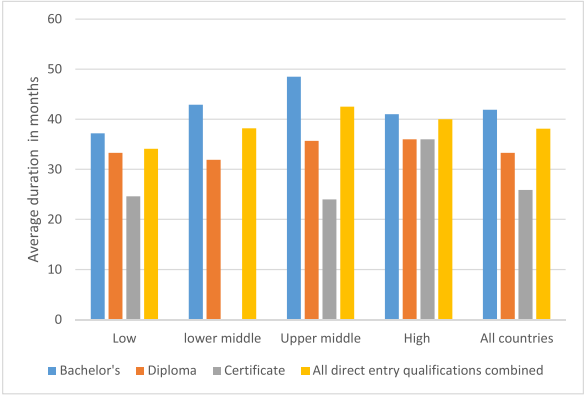
	Country income group				
	Low	Lower-middle	Upper-middle	High	All countries
Direct entry					
One qualification type	17 (74%)	13 (57%)	15 (83%)	18 (95%)	63 (76%)
Two qualification types	1 (4%)	9 (39%)	3 (17%)	1 (5%)	14 (17%)
Three qualification types	5 (22%)	1 (4%)	0 (0%)	0 (0%)	6 (7%)
Total	23 (100%)	23 (100%)	18 (100%)	19 (100%)	83 (100%)
Post-nursing					
One qualification types	11 (79%)	10 (71%)	4 (57%)	16 (89%)	41 (77%)
Two qualification types	3 (21%)	4 (29%)	3 (43%)	2 (11%)	12 (23%)
Total	14 (100%)	14 (100%)	7 (100%)	18 (100%)	53 (100%)

3.4. Duration of midwifery education programmes

Fig. 3 shows the mean duration of post-nursing midwifery education programmes in months, by level of qualification and country income grouping. There is a very marked range in the length of time required to complete direct-entry programmes that enable graduates to qualify as a midwife: the shortest programmes are 18 months long, and the longest 60 months. The overall average duration of direct entry programmes is 38.1 months (i.e. just over 3 years). However, there is a clear gradient, with Bachelor's degree programmes being longer, followed by Diploma and the Certificate programmes being the shortest. Generally, lower income countries have programmes of shorter duration than high income countries for each academic qualification (particularly Bachelor's degrees). When an average of all qualifications is calculated for the different income groups, low- and lower-middle-income countries have shorter average duration of education overall, and this is probably mostly due to a larger number of Certificate and Diploma courses making up their overall midwifery education system. Post-nursing programmes also vary markedly in length, but there is no clear pattern between country income groups.

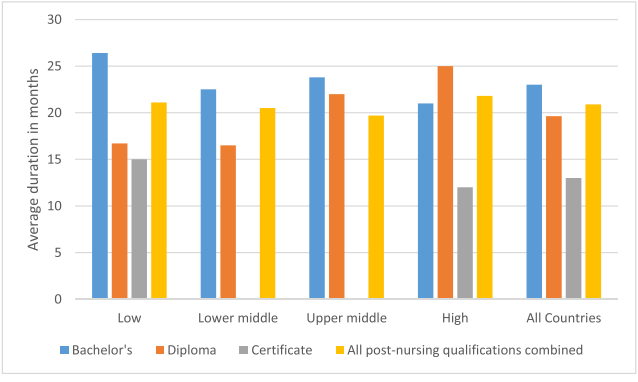
ICM guidelines recommend that direct-entry midwifery education should last for a minimum of 36 months. As can be seen in Table 2, almost a quarter of countries with direct-entry programmes (23%) had a programme which was shorter than 36 months: the majority of these were Diploma or Certificate courses, with most being in low- or lower-middle-income countries. Many of these shorter programmes run alongside other programmes that are over 36 months. However, there are eleven countries with no programme over 36 months: six are low-income countries, three are lower-middle-income, and the remaining two are upper-middle-income. Around 28% of all post-nursing courses are below the minimum recommended duration of 18 months, but again there is no obvious pattern across the country income groupings.

a) **Direct entry (n=109)**



*Duration not reported for one programme (certificate level, lower-middle-income)

b) **Post-nursing (n=65)**



*Duration not reported for one country (Bachelor's level, high-income)

Fig. 3. Mean duration of midwifery programmes in months, by level of qualification and country income grouping.

3.5. Private and public sector provision of midwifery education

Fig. 4 shows the distribution of midwifery education provision by public, private for-profit and private not-for-profit providers. This data needs to be interpreted with caution as there is a high proportion of missing data (around a quarter), the data only refers to number of institutions, not number of graduates and findings will be heavily weighted to countries with the highest number of institutions. However the graph suggests that for direct entry the greatest proportion of institutions providing Bachelor's degrees in low-, lower-middle- and upper-middle-income countries are private for-profit. The same pattern is seen for Diploma level programmes for low and upper-middle income countries. Certificate level qualifications are only found in private sector institutions in low-income countries. All three types of programmes are almost exclusively available in the public sector in high income countries. For post-nursing courses, the majority of institutions offering Bachelor's programmes and Diploma programmes in low-income countries, and Bachelor's programmes in lower-middle-income countries are reported to be private for-profit.

4. Discussion

Our findings confirm marked complexity in midwifery education pathways, with many countries running multiple pathways resulting in differing qualifications. There is an emphasis on direct entry rather than post-midwifery programmes. LMICs tended to have larger number of pathways running concurrently, and their programmes also tended to be of shorter duration with fewer meeting the ICM criteria for 36 months for direct entry. LMICS also rely heavily on private providers for the delivery of midwifery education.

4.1. An emphasis on direct entry programmes

The emphasis on direct entry programmes in most countries is not surprising: while dual qualification is often suggested as providing benefits in terms of workforce flexibility [23], direct entry midwifery can be seen as having advantages both in the ability to respond more rapidly to a midwife shortage, and also in terms of positioning midwifery as a distinct and autonomous profession. In countries such as the UK and Canada, the development and proliferation of direct entry schemes are seen as a way to increase the autonomy of the midwifery profession, whereas the link with nursing leads to an inherent subordination to the medical profession [24]. However, it is noticeable, and maybe quite surprising, that there are still a number of high-income countries (39%) that rely solely on post-nursing programmes.

4.2. Duration of midwife education

Duration of midwifery education programmes is a vital component of quality: sufficient time needs to be allocated to ensure both theoretical subjects and practical competencies are fully covered, and adequate practical experience is gained. The concentration of programmes of duration below the recommended minimum duration in the lowest income countries is not surprising, although it is noteworthy that all responding countries are ICM members and therefore will be aware of guidance on this issue. Accelerated programmes aimed at producing cadres such as community midwives tend to be introduced where health systems are weakest and may be particularly prevalent in fragile and conflict-affected countries [18]. Indeed, it is notable that eight of the eleven countries with no direct programme over 36 months appeared on the World Bank Harmonised fragile state list in the last five years [19].

Table 2
Number of direct and post-nursing midwifery programmes below ICM-recommended duration (36 months and 18 months respectively).

Direct entry programmes					
	Bachelor's	Diploma	Certificate	Total	% of all programmes < 36 months
High income	1	0	0	1	5
Upper middle income	0	2	2	4	19
Lower middle income	1	6	0	7	21
Low income	4	4	5	13	38
All countries	6	12	7	25	23
Post-nursing programmes					
	Bachelor's	**Diploma**	**Certificate**	**Total**	**% of all programmes < 18 months**
High income	1	1	1	3	19
Upper middle income	2	1	3	6	33
Lower middle income	2	3	0	5	50
Low income	1	2	1	4	20
All countries	6	7	5	18	28

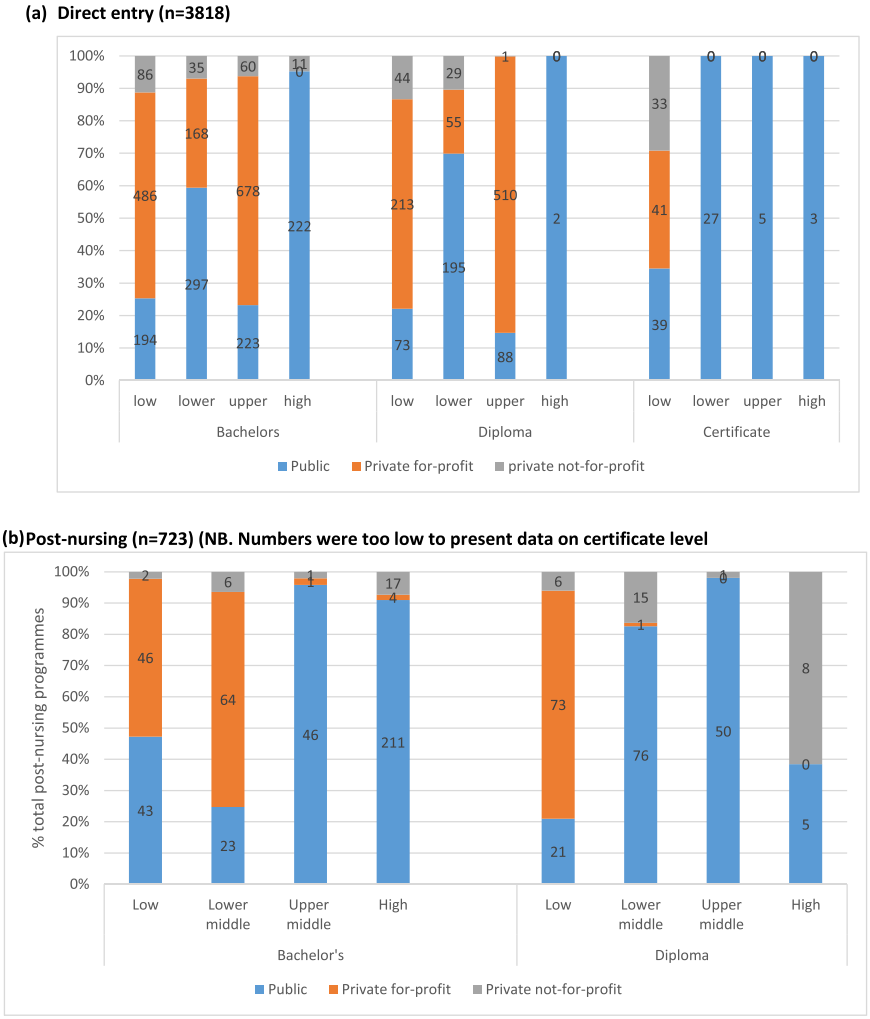


Fig. 4. Number of institutions offering each type of midwifery education programme by sector and income group (n = 3818).

These shorter programmes are often seen as a temporary measure, with the idea that they will cover a period of major shortage but be replaced over time with more extensive training, as, for instance, occurred in Cambodia[25]. Evidence is limited on the competencies of graduates from these shorter, accelerated courses. Two studies comparing the competencies of shortened courses with longer programmes found little difference but highlighted that the standard of graduates from both shorter and longer programmes was poor, particularly around basic emergency care [13,26]. One study also found significant failings in teaching provision, including limitations in opportunities to gain clinical experience [13]. This suggests that emphasis should not just be on extending the duration of programmes but improving the quality of competency-based education more generally in countries where it is weak.

4.3. *Moves toward private provision of midwifery education*

Increasing growth of private universities in low- and middle-income

reflect a growing demand for tertiary education that cannot be met by the public sector [27]. While there is some suggestion that private institutions may have a role to play in revitalising often outdated approaches to tertiary education, private provision of health worker education is of variable quality [28] and in some cases can be of poorer quality compared to public sector provision. These for-profit institutions may also pose a risk to accreditation and certification practices [27], further threatening quality and professional development. They are also more likely to be sited in central urban areas, thus limiting access to education in rural areas where the need is greatest [29]. Evidence suggests privately educated midwives may be less likely to work in the public sector or rural areas, and more likely to intend to migrate to high-income countries [29]. For private institutions not directly linked to hospitals, there may be difficulties in ensuring students have adequate exposure to practical experience [29].

4.4. Existing knowledge and gaps in evidence on best approaches to midwifery education

There is evidence-based guidance from the ICM on the competencies midwives need to practice safely (as well as factors like the appropriate balance between theoretical and practical education) which can form a basis for curriculum review and development. WHO guidelines have also defined the competencies required by midwifery educators [30]. However, several studies suggest that some midwife graduates in LMICs fall short of the standards required [13,26,31,32] and/or lack confidence [33]. Studies have highlighted barriers in programmes attaining ICM standards such as a lack of separation between nursing and midwifery, inadequate access to practical components and inadequate academic standards among midwifery educators, as well as broader economic and political restrictions [1,34]. What is less clear from existing literature is the impact of multiple and differing pathways on quality of care and health system effectiveness. As the majority of maternal and newborn mortality and stillbirth occurs in low- and lower-middle-income countries, it is vital that we understand potential advantages and disadvantages of different approaches.

The existing literature provides very little evidence about how the competencies of midwives educated through either direct-entry or post-nursing approaches differ: one study in seven African countries suggested that direct entry midwives were more confident in providing care than those on post-nursing pathways [35], but there appear to be no studies that directly compare competencies from different pathways, or indeed more broadly about how their career trajectories differ. Wider studies are also needed that examine the economic costs of post-nursing programmes compared to direct entry, as well as differences in retention between the two pathways and the roles that dual qualified staff take. There is also little evidence of the extent to which dual qualification affects workforce flexibility, and the impact this has on health systems efficiency and access to care.

5. Limitations

It is likely that the ICM survey under-reports the prevalence of short education programmes for midwives. In some countries cadres such as auxiliary nurse-midwives or multi-purpose health workers may have been excluded as they are not acknowledged as midwives, even though they have responsibility for some or all elements of the continuum of maternal and newborn health care, including childbirth. Therefore, there is likely to be even greater complexity related to cadres responsible for maternal and newborn care, particularly in low-income countries. There are issues with using months as measurement of programme duration, as it is not possible to know how many hours are spent learning, or indeed the split between theoretical or classroom teaching and clinical experience. The variation for post-nursing training may to some extent reflect the degree to which maternal health care has been covered within the nursing qualification, meaning that students may be entering post-nursing qualifications with very different levels of knowledge and experience in this area. Unfortunately, this study was not able to examine maternity-related content in nurse education provision.

It is recognised the data used may not be globally representative, or indeed representative of all country income groupings, but the relatively large size makes it possible to identify general trends and patterns. It is also important to acknowledge that the responses could be inconsistent in terms of terminology used to define qualification types. There was some confusion and uncertainty over Certificate and Diploma qualifications in particular, so differences between the two need to be interpreted with caution. The use of income groupings does not infer homogeneity between countries within each grouping, but is used as a first attempt to examine how patterns may differ globally, and the potential impact of resource limitations. Further, more nuanced data collection and analysis could refine and extend our broad findings.

6. Conclusion

There remains significant diversity in approaches to pre-service education of the midwifery workforce. LMICs often have multiple pathways with programmes of shorter duration. Around a quarter of all programmes do not meet the ICM recommended minimum duration, and these are particularly concentrated in LMICs. Many of these poorer countries rely heavily of the private sector for the provision of midwifery education, which can create barriers to effective accreditation. This combination of multiple pathways and providers creates a complex midwifery education landscape. Quality and consistency of midwifery education is a problem that extends far beyond just the duration of programmes, and we strongly recommend that countries draw on existing international guidelines to develop and improve the standard of midwifery graduates. Further research is needed to understand the implications of this complex landscape on equity of service delivery and deployment, as well as the career development and trajectories of midwifery practitioners in order to establish best practice.

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CRediT authorship contribution statement

All authors conceptualised the research question. SN analysed the data and wrote the first draft. All authors reviewed and agreed the final draft.

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Conflict of Interest

Caroline Homer declares she is the current Editor-in-Chief of Women & Birth but took no part in the peer review of the manuscript. One of the Associate Editors managed this process. All other authors have no further conflicts to declare.

Ethics

The study relies on publicly available data and secondary sources, so does not require ethical clearance.

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