



## Strengthening global midwifery education to improve quality maternity care: Co-designing the World Health Organization Midwifery Assessment Tool for Education (MATE)

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### ABSTRACT

**Aims:** To describe a three-phase co-designed project to develop a culturally appropriate and relevant education assessment tool, and report on pilot and field-testing phases.

**Background:** High-quality midwifery education is essential for high-quality maternity care (WHO 2019); however midwifery education and maternity care vary in quality throughout Europe. To support countries in strengthening their midwifery education, World Health Organization (WHO) European Region commissioned development of the Midwifery Assessment Tool for Education (MATE). The tool was developed over three years, using an iterative, collaborative process with regional experts. Published by WHO in May 2020, MATE provides focused questions and evidence-informed resources to stimulate and inform discussions within country.

**Design:** Three-phase co-design approach to develop, pilot and field-test an education assessment tool.

**Methods:** Phase 1: initial development of MATE with expert midwifery support; Phase 2: MATE piloting workshops in Czech Republic and Lithuania focusing on clarity, usability and relevance; Phase 3: MATE field-testing workshop in Bulgaria exploring the process of using MATE and its effectiveness for generating discussion. Purposive selection of workshop participants ensured a broad range of perspectives: clinicians, educators, students, policy makers and service users. All participants were invited to give narrative feedback during workshops and via completion of a post-workshop online survey. The XX University Research Ethics Committee advised that formal ethical review was unnecessary.

**Results:** Feedback from collaborators in all phases indicated that engaging with MATE co-design and testing was a positive experience. A ‘bottoms up’ approach ensured that MATE content was relevant to regional needs, culturally acceptable and appropriate.

Seventy-nine individuals participated in Phases 2 and 3 and all were sent a post-workshop online survey, with 31 responses (39%). Qualitative and quantitative data indicated that the aim of MATE was well understood, and its usability and relevance were evaluated positively. In Phase 2, improvements to wording and format were suggested. MATE was subsequently amended prior to field testing. Phase 3 feedback indicated that MATE was highly effective for generating in-country dialogue and frank discussions about the future of midwifery education and practice.

**Conclusions:** Using a co-design approach has ensured that MATE is culturally relevant, accessible and appropriate. This initial evaluation indicates that MATE can facilitate in-country dialogue and support the strengthening of midwifery education in accordance with WHO aims.

Next steps are a fully evaluated trial of MATE in a selected partner country, where we will continue to work collaboratively to optimise engagement and ensure cultural appropriateness.

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## 1. Introduction

Unacceptably high levels of maternal and infant mortality and morbidity persist across the world; shockingly, many of these deaths and illnesses are preventable. A key solution has been identified as investing in the development of a well-educated midwifery workforce (Homer et al., 2014; Nove et al., 2021; Renfrew et al., 2014; UNFPA, International Confederation of Midwives ICM and World Health Organization WHO, 2021). Strong evidence indicates that 'when midwives are educated to international standards, and midwifery includes the provision of family planning, it could avert more than 80% of all maternal deaths, stillbirths and neonatal deaths. Achieving this impact also requires that midwives are licensed, regulated, fully integrated into health systems and working in interprofessional teams' (WHO, 2019, p iv).

Yet despite this evidence, there has been 'startling under-investment in midwifery education and training worldwide' (WHO 2019, p. ix). Many women across the world do not have access to the skilled care of a well-educated midwife (Renfrew and Malata, 2021). In response, the *WHO Framework for Action: Strengthening Quality Midwifery Education for Universal Health Coverage 2030* (WHO, 2019) has been developed with the intention of supporting countries to strengthen midwifery education, via strategic priorities and a seven-step action plan.

This current project was conducted within the WHO European Region, at the request of the WHO Regional Office for Europe Health Workforce Programme, (known at the time as Human Resources for Health, Division of Health Systems and Public Health). For the 2015–2020 period, a key objective of this technical programme was to strengthen the midwifery and nursing workforce across Europe by 'scaling up and transforming education' (WHO Regional Office for Europe, 2015 p.10), to maximise the contribution of midwives and nurses to universal health coverage. Although in the European Region levels of maternal and infant mortality and morbidity are considerably lower than those of some other regions, there are nevertheless notable differences in outcomes across the region and certainly no excuse for complacency (Jokinen and Vermeulen, 2015). Women's access to the skilled support of a midwife also varies widely across the region, as professional midwifery differs in terms of educational preparation, professional regulation, and scope of practice. There is significant scope to strengthen high quality midwifery education in many parts of the region, especially within Eastern Europe member states where midwifery is generally not yet well established.

In line with the WHO European Region technical programme objective of strengthening midwifery education across the region, the WHO Collaborating Centre for Midwifery Development at Cardiff (*not named for review*) University was commissioned to develop an evidence-informed guide to support countries with this aim. This paper describes the process of developing this guide, the Midwifery Assessment Tool for Education (MATE), using co-design: an iterative, collaborative process with regional experts over three years.

We begin by explaining what MATE is and describing the existing maternity care quality in three Eastern European countries where MATE collaborators were based (Czech Republic, Lithuania, Bulgaria). We identify why midwifery education needed to be strengthened in those member states.

In the second part of the paper, we describe how we used a co-design approach with colleagues from these countries to develop a culturally appropriate and relevant tool. This process included piloting and field-testing MATE in each country and evaluating (1) its efficiency (2) its effectiveness for generating discussions. We report on the findings of the evaluation that accompanied the pilot and field-testing process.

## 2. Background

MATE is an evidence-informed downloadable resource for member states who wish to develop initial midwifery education where this has not existed previously, or to strengthen their existing midwifery

education. It is a self-assessment tool which can be used by a range of stakeholders, for example: midwives, nurses, educators, policy makers and users of maternity services.

Frank dialogue and discussions are encouraged by asking stakeholders to consider: (i) where they are now in relation to midwifery education, (ii) where they would like to be in the future and (iii) what actions they need to take to realise that ambition? These questions are posed in relation to a range of topics: provision of maternity care; initial preparation of midwives; access to programmes; curriculum (general, theory, practice); academic faculty; resources; clinical learning; regulation of education. The tool includes a response section to collate discussions and a section with links to useful resources (for example, WHO and ICM documents).

Although MATE was originally designed to be used internally within countries with no expectation of wider sharing, it also has potential as a benchmarking tool. For example, it could be completed prior to a visit by countries requesting support or guidance from external organisations such as WHO. It could also be a valuable resource for member states who are developing midwifery education in line with the action plan in the *Framework for Action: Strengthening Quality Midwifery Education for Universal Health Coverage 2030* (World Health Organization, 2019), as it fits well with the Step 2: 'gather data and evidence' step (WHO, 2019, p. xi).

Importantly, we took a 'bottoms up' participatory approach to developing MATE, drawing on support from a range of midwives (clinicians, educators, students), midwifery associations, policy makers and maternity service users from across Eastern Europe (where the WHO European Region had identified that need for the tool was greatest). We propose that using a co-design approach with the intended end users of MATE has ensured that the tool is relevant, culturally acceptable and appropriate.

In the next section we describe the quality of maternity care in the three Eastern European countries which supported us to develop MATE (Czech Republic, Lithuania, Bulgaria) and identify why their midwifery education needed to be strengthened.

### 2.1. Maternity care and midwifery education in the WHO EURO region: The need for change

Collection and collation of statistics on maternity care and outcomes for women and newborns is challenging and its quality varies considerably across countries. Despite the endeavours of reports such as the *State of the World's Midwifery* (UNFPA, ICM and WHO, 2021) to capture the global picture, it is the case that data from care providers such as private institutions are frequently inaccurate; in addition, little is known about the women who do not access care.

Across the 53 member states of the WHO European region (<https://www.euro.who.int/en>) it is evident that there is great disparity in the maternity services that are provided, the outcomes for women and babies and the role that midwives play in care provision. Midwifery education also varies considerably, as does the regulation of qualified midwives and the legislation that enables them to practice as autonomous professionals (Jokinen and Vermeulen, 2015). The disparity appears to be more evident in Eastern European countries, especially countries which had communist governments or were part of the Soviet Union (Mivšek et al., 2016).

We gathered data from the three countries where we worked closely to develop MATE and where the tool was piloted and field-tested, to set the scene for the project. These data are reported in Table 1.

## 3. Methods

A co-design approach was taken to the project; that is, there was 'meaningful engagement of end-users' (Slattery et al., 2020 p.1) in the development of the tool. As Slattery et al. (2020) note, 'co-design' is a rather broad term which may cover a range of engagement activities from initial problem identification through to project design and

interpretation of results. End-users may include clinicians, users of services, members of the public or policy makers, depending upon the project focus. In this project, engagement focused on MATE design, refinement and implementation. The end-users were predominantly those providing midwifery and maternity care in the WHO European Region, although there was also some engagement with service-users and policy-makers.

3.1. Phase 1: Developing MATE

The initial development took place from January to July 2017, in consultation with experts in midwifery and nursing from Lithuania, Slovakia, Slovenia and Bulgaria. These experts were either known to us in our work as a WHO European Region Collaborating Centre or via connections made through the European Midwives Association. An iterative process was used, whereby versions of a possible tool were circulated via email for comment and revision until an agreed draft version of MATE was ready for testing.

3.2. Phase 2: Piloting MATE

In Phase 2 (2018), MATE was piloted at two workshops held in the midwifery faculties of universities in Czech Republic and Lithuania respectively. The aim of the pilot was to evaluate the structure and content of the tool, focusing on its clarity of content, usability and relevance. We were also interested in participants' views on its usefulness for strengthening midwifery education in an Eastern European country.

Academic colleagues in each country (Author 3 in Czech Republic and Author 5 in Lithuania) invited a purposeful sample of midwives and users of the maternity services to participate. Midwives included clinical midwives working in both public and private facilities, midwifery educators, student midwives and representatives of midwifery associations.

The pilot phase was supported by the European Midwives Association (EMA), and the EMA President (Author 7) contributed to introductory presentations and groupwork facilitation. The workshops commenced with the WHO CC team (Author 1, Author 2, Author 6) introducing participants to MATE and explaining the reasons for its development. These discussions were conducted in the English language, with interpretation provided by the hosts where necessary. This was followed by an opportunity to use MATE in small groups, in the language of the participants' choice. Ground rules were agreed for the group work, to ensure that participants felt they could contribute freely.

We then invited participants to provide feedback using informal and formal processes. This included informal plenary feedback at the end of the workshop, where participants were asked to give their thoughts on what had worked well and what had worked less well, as well as their suggestions for immediate changes.

All participants were also invited to respond to a structured online questionnaire after the workshop. The survey was in English and had 10 questions covering four topics (see Table 2 for pilot workshop survey questions):

- Ease of understanding
- Suggestions for improvement
- Relevance
- Support (Insert Table 2 here)

The questionnaire used a Likert scale to collect simple descriptive statistics, as well as providing opportunities for free text comments. It had been piloted with members of the WHO CC to ensure its clarity and acceptability.

As a result of Phase 2, amendments were made to the wording and format of MATE prior to field-testing.

**Table 1**  
Country data from pilot and field-test countries.

	Czech Republic	Lithuania	Bulgaria
<b>National maternity care situation</b>			
Number of births	112,231 (2019) <sup>a</sup>	27,400 (2019) <sup>b</sup>	61,882 (2019) <sup>c</sup>
Caesarean section rate	24.8% (2020) in official statistics <sup>d</sup>	19.4% (2019) <sup>e</sup>	43.1% (2017) <sup>f</sup>
Care provision:	<b>Antenatal:</b> Gynaecologist care for all women is covered by statutory health insurance. Midwifery care is covered only in hospital. <b>Intrapartum:</b> Midwives can legally support birth but this varies; in some maternity units midwives can work to the full range of their competencies, however, most midwives work under direct supervision of obstetricians or only assist them. <b>Postnatal care:</b> Health insurance does not cover midwifery care in the community. Alternative 'out-patient birth' option is available, where a woman pays for midwifery care at home. The newborn is cared for by a paediatrician.	<b>Antenatal:</b> Care is supervised by a midwife and, if necessary, an obstetrician-gynaecologist. <b>Intrapartum:</b> All births involve a midwife, whether or not the doctor is present. Midwives can provide care for physiological birth independently, but not in all maternity units. <b>Postnatal care:</b> Midwives provide postnatal care for women and newborns up to 28 days after birth.	<b>Antenatal:</b> All care is provided by hospitals (public or private), mostly from a doctor without any contact with a midwife. <b>Intrapartum:</b> Doctors conduct the birth, with active participation of midwives. Midwives cannot deliver the baby without calling a doctor, but can provide autonomous care to low risk women in labour. <b>Postnatal care:</b> Provided by GP / paediatrician.
Where do women give birth?	In state in-patient medical facilities. There are no maternity homes and no legislation to enable homebirths.	Mostly within hospitals. Homebirth was legalised in 2019 but the numbers are very small.	In public or private hospitals. Homebirth is not legal although it happens illegally amongst some groups of women, unattended.
Is there over or under medicalisation of maternity care?	Centralization of pathological conditions in perinatology centres is one of the advantages of the Czech obstetric system. However, unnecessary interventions and routine procedures exist which impact on the physiological process of normal childbirth.	There is a move towards ensuring that medicalization is only for medical reasons, incorporating a holistic approach where physiological birth is encouraged and supported.	There is clear evidence of over-medicalisation in the very high Caesarean section rates.
Do all women have access to	No - comprehensive midwifery care is	Yes.	No, in most cases women do not have access to

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Table 1 (continued)

	Czech Republic	Lithuania	Bulgaria
care from a midwife?	perceived as above standard or even unnecessary and is still unavailable to many women as they must pay for it themselves.		care from a midwife.
How is maternity care funded?	Statutory health insurance	Compulsory health insurance	National Health Insurance Fund (NHIF). Most pregnant women have public insurance, many high-income women opt for privately funded maternity care. Many Roma women have no health insurance and the state covers birth expenses.
<b>Public health issues</b>			
What are the public health issues experienced by pregnant women which may affect outcomes	Key issues: obesity, diabetes mellitus, hypertension, and smoking. Long-term deficits in primary prevention prenatally mean that pregnant women are not generally in optimal health. Historically, there were no significant socioeconomic disparities within the population. However, the socioeconomic gap has been widening over the past several years.	Key issues: Diabetes (gestational diabetes) Unhealthy lifestyle (smoking; obesity; lack of physical activities)	Key issues: Obesity (as a result of low physical activity and poor nutrition), and diabetes mellitus. Tobacco misuse. Gender based violence (GBV). Many couples have fertility problems. There are disparities between population groups. Roma women particularly experience health inequalities.
Health inequalities		Behavioural risk factors higher among groups with lower education or income. which contributes greatly to health inequalities. <sup>8</sup>	
<b>Current midwifery situation</b>			
Can midwives work to their full scope of practice?	No, midwives cannot fully assume their full scope of practice. They cannot carry out their work independently and to the extent of their statutory competencies <sup>5</sup>	Yes, this is enabled in law.	No, midwives cannot undertake the full role and scope of practice because they are not able to negotiate under the National Framework Contract as an independent role activity.
Can midwives work according to ICM competencies and EU directives?	In general, no. In some areas this is supported, but in many areas the system does not allow them to work according to the full range of ICM competencies or EU Directives (similar to other	Yes – midwives work in line with the competencies provided for in the EU Directives.	In reality, midwives cannot work according to ICM competencies or EU Directives ( Mivšek et al., 2016).

Table 1 (continued)

	Czech Republic	Lithuania	Bulgaria
Do midwives have a licence to practice and is there Professional Regulation?	Central and Eastern European countries) (Mivšek et al., 2016). Midwives can register with the Ministry of Health to receive a licence to practice. However, obstacles exist: national legislative ambiguity, prevailing biomedical model in obstetrics, and political unwillingness for change.	Midwives are regulated by the Law on Nursing and Midwifery Practice and the Midwife Medical Norm. However, this still does not provide for professional independence. The midwife must renew her license every 5 years by completing 60 academic hours of postgraduate training.	Midwives have a licence to practice independently and open private practices, but these activities are not paid for by public insurance. Midwives are not regulated separately from nurses.
Is there an adequately staffed midwifery workforce?	No. There are insufficient numbers of midwives in primary care and the value that midwifery brings for women is not recognised. There appears to be a lack of public interest in midwifery.	Yes. Workforce statistics show there is no shortage of midwives in the health care system	No. In 2019 there were 3269 midwives working in the hospitals. According to the President of the Association of Health Care Professionals in Bulgaria, there is a shortage of 8000 midwives.
<b>Midwifery Education</b>			
Initial preparation of midwives – how long and at what level is the programme?	Preparation of midwives is via a 3-year Bachelor level programme. The curriculum meets the EU regulations.	Two routes to becoming a midwife, a legacy from Soviet times. Route A –University based, 4 years leads to Bachelor degree and midwifery professional qualification. Route B – College based, 3.5 years leads to Professional Bachelor degree and midwifery professional qualification.	Preparation is via a university Bachelor degree of 4 years duration (3 years theoretical and practical education and 1 year internship).
Where does midwifery education take place?	In several university faculties of medicine or socio-medical studies.	In university (4 years) and college (3.5 years). There are 2 educational establishments providing midwifery education.	In medical universities or their affiliates.
Is midwifery education independent from nursing?	Yes	Yes	Yes
Recruitment of student midwives	Sufficient interest from applicants.	High demand, attracts students with high grades.	Difficulty in recruiting new students (improved over the last two years).
At qualification, do the students	Yes. Graduates undergo a several-	Usually. There are only two	Yes. The huge shortage of

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Table 1 (continued)

	Czech Republic	Lithuania	Bulgaria
get jobs as midwives?	month long adaptation period before becoming full team members.	midwifery education programmes so the labour market is not saturated.	midwives means that every graduate gains work. However, many graduates are leaving the country to work abroad.
Do students have to pay for midwifery education?	The Bachelor's degree is fully state-funded for a standard period of 3 or 4 years	Varies. Some Government funded places, for applicants with high marks in national exams. Competition is very high. Students not receiving government funding must self-finance (3426 Euros per year).	Varies. Some government funded places, available only to those without an existing Bachelor's degree. Government funded students have to pay additional 357 Euros per year in taxes. Students not receiving government funding must self-finance (2201 Euros per year).
Is midwifery education led by midwife academics or by other professional groups?	Mostly led by a midwife academic, although in some universities led by an obstetrician.	Mainly led by nurse academics (shortage of midwives with Masters or PhD degrees, required to teach on the programme).	Midwifery education is led by midwife academics.

<sup>a</sup> <https://www.statista.com/statistics/1233234/live-births-in-czechia/>

<sup>b</sup> <https://www.stat.gov.lt/en>

<sup>c</sup> [https://www.nsi.bg/sites/default/files/files/pressreleases/Population2019\\_en\\_XE8MEZL.pdf](https://www.nsi.bg/sites/default/files/files/pressreleases/Population2019_en_XE8MEZL.pdf)

<sup>d</sup> [https://www.gynstart.cz/messages.php?sid=1095&confirm\\_rules=1](https://www.gynstart.cz/messages.php?sid=1095&confirm_rules=1)

<sup>e</sup> <https://www.oecd-ilibrary.org/sites/fa1f7281-en/index.html?itemId=/content/component/fa1f7281-en>

<sup>f</sup> <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20191217-1>

<sup>g</sup> State of Health in the EU: Country Health Profile 2017 – Lithuania

<sup>h</sup> Hořejší A.(2012) Analýza současného stavu v porodnictví s ohledem na postavení porodních asistentek a možnosti svobodné volby žen. <https://www.unipa.cz/analyza-soucasneho-stavu-vporodnictvi-sohledem-na-postaveni-porodnich-asistentek-a-moznosti-svobodne-volby-zen/>. Path: Homepage; Porodní asistentky; Právo a legislativa; Analýzy.

### 3.3. Phase 3: Field-testing MATE

In Phase 3 (2019), MATE was field tested in a two-day workshop in Sofia, Bulgaria. As in the pilot phase, academic colleagues (led by Author 4) purposefully recruited a range of midwives to ensure representativeness, and a similar workshop format was used. However, the field test differed from the pilot, as not only did we want to obtain feedback on the content, usability and acceptability of MATE, but we also wanted to understand the process of using MATE. Specifically, we wanted to explore:

1. Whether the process of using the tool to self-assess midwifery education was acceptable and useful?
2. Whether the tool improved the ability of midwives and users of maternity services to have open discussions about strengthening initial midwifery education within the country?

Table 2

Pilot Workshop Survey Questions.

• Topic	Question
• Ease of understanding	1) How easy was it to understand the aim of MATE?
• Ease of understanding	2) How easy was it to understand the questions in MATE?
• Ease of understanding	3) How easy was it to answer how to use MATE?
• Suggestions for improvement	4) Do you have any suggestions for improving the format of MATE?
• Suggestions for improvement	5) Do you have any suggestions for improving the wording of MATE?
Relevance	6) Is MATE relevant to midwifery in your country?
Relevance	7) Are we covering the correct issues?
Relevance	8) Do you think MATE could be relevant and useful to midwives in other Eastern European countries?
Relevance	9) Do you have any suggestions for improving the MATE tool so it would be more relevant and useful to midwives in Eastern European countries?
Support	10) What support might midwives need after using the MATE tool?

Participants worked in homogenous groups of 4–5 individuals (i.e. of student midwives, clinical midwives), as our experiences at the pilot stage indicated that homogenous groups were more likely to facilitate open discussions as social hierarchies and power dynamics were minimised (Sim, 1998). Each group was asked to work through MATE, discussing the MATE questions and providing answers in the response book. The discussions were facilitated by the WHO CC team, who also took brief notes about the discussions and quality of participant engagement.

All field-test materials were translated into Bulgarian to optimise accessibility, as recommended by our hosts. The workshop introduction was conducted in English, with interpretation provided by the host (Author 4). Groupwork discussions were conducted in the language of the participants' choice.

Participants reported back their experiences of using MATE in two different ways. Firstly, they participated in a moderated plenary discussion where their verbal feedback was recorded on flip chart paper. If necessary, responses in Bulgarian were translated into English. Secondly, following the workshop all participants were sent an online Bulgarian language questionnaire via email. The questionnaire was adapted from the Phase 2 questionnaire, with some additional questions about the process of using MATE.

The University Research Ethics Committee advised that formal ethical review was unnecessary. All participants in the workshops and online evaluations received prior written information; participation was voluntary, and completion of the questionnaire was taken to imply consent.

## 4. Results

Seventy-nine individuals in total participated in the Phase 2 pilot (n = 44) and Phase 3 field-test (n = 35) workshops. The same approach to evaluation (plenary feedback and online survey) was taken in both phases. Both qualitative and quantitative data indicated that the aim of MATE was well understood, and its usability and relevance were evaluated positively.

### 4.1. Phase 2 (Pilot in Czech Republic and Lithuania): Plenary feedback

Plenary feedback provided important qualitative insights. The aim of MATE was well understood, and its usability and relevance were evaluated positively. However, it became evident that some MATE terminology was unclear or that understandings differed (e.g., the terms primary care, clinic, maternity care were not well understood). As a result, some words were changed, and a glossary of key words was added to MATE. Plenary discussions also enabled us to better appreciate how

the scope and role of the midwife differed considerably between countries, and that it was important not to assume shared understanding. This led to a decision to add an initial 'steer' question at the beginning of the tool, which asked MATE users to determine whether midwives in their country currently met the ICM definition of the midwife (ICM, 2017), and if not, whether this was desirable.

During the pilot phase it also became apparent that MATE was attempting to cover too many issues. The original tool had included questions about maternity care provision, regulation, status of midwifery and the experiences of service users, which was over-ambitious and impractical. Following discussions amongst the core team and collaborators, the focus of MATE was reduced to two key themes: 'the role of the midwife in the care of women and newborns', and a range of issues related specifically to 'midwifery education'.

#### 4.2. Phase 2: Online survey findings

There were fourteen responses to the online survey as follows: Czech Republic: 19 emails sent - 5 surveys (26 %) returned; Lithuania: 25 emails sent - 9 surveys (36 %) returned.

Data from both countries are collated given the small number of responses. The country of the speaker is identified by CZ for Czech Republic and LIT for Lithuania. Responses generally reflected the content of the plenary discussions and are presented according to the four survey topics:

**Ease of understanding:** Most participants (13) reported that it was easy/very easy to understand the aim of MATE; most found it easy to understand the MATE questions (10), with three finding it neither easy nor difficult and one finding it difficult; most (12) found it easy/very easy to understand how to use MATE with two finding it neither easy nor difficult. Free text comments were mainly positive: "It was very inspiring (sic) and I hope it can be very useful for us" (LIT). The less positive comments related to MATE terminology, as identified in the plenary feedback discussed above: "Some of the question weren't clear to understand in meaning. Different terminology also because of different setting of care and different situation in midwifery and struggles we deal with" (CZ).

**Suggestions for improvement:** Free text responses related to MATE format and wording and were mostly positive: "I think the format is really good, I liked that it is asking how the things are now and how we want and can improve that" (LIT). Suggested changes again related to terminology, for example in relation to birth: "Maybe to specify term 'deliveries' in the question 'what is the minimum of deliveries that a student midwife has to take before qualification?' Delivery - just to catch a baby, or to take care of the women from regular contractions until baby is born?" (LIT).

**Relevance:** All participants (14) thought that MATE was very relevant/relevant for their country and covered all the correct issues: "It's good tool to evaluate our position now and seek, plan some changes in the future" (LIT); "We can use it well in the discussion - not only about education but also about changes in midwifery in general in our country" (CZ). In relation to whether MATE could be useful and relevant for other Eastern European countries, most (12) thought it was either very relevant/relevant with one participant being neutral and one stating that it was not relevant (they did not elaborate on this). A Lithuanian participant commented: "It is relevant in my country, but there are many countries whose system is struggling a lot more than us. I'm sure this tool can help them make it better." (LIT).

**Support:** Regarding any support that might be needed after using MATE, ongoing mentorship was mentioned: "They might need mentor who could explain some details and guide them how to achieve goals. Also who could supervise them and their work" (LIT).

#### 4.3. Phase 3 (Bulgaria field-test): Plenary feedback

In the Phase 3 field-test, plenary feedback indicated that participants considered MATE to be highly effective for generating in-country dialogue and frank discussions about the future of midwifery education and

practice. This feedback was supported by the team's observations of enthusiastic and engaged participants who appeared keen to carry on discussions after the end of the workshop.

#### 4.4. Phase 3: Online survey

Thirty-five participants were sent the online survey and seventeen responses (49 %) were received. Again, responses generally reflected the content of the plenary discussions and are presented according to the survey topics:

**Ease of understanding:** All participants (17) reported that it was easy/very easy to understand the aim of MATE; most found it easy to understand the MATE questions (16), with one finding it neither easy nor difficult; most (16) found it easy/very easy to understand how to use MATE. Free text comments were overwhelmingly positive.

**Process of using MATE:** We were interested to find out about experiences of using MATE. All participants felt that they had been allocated enough time for the discussions, and all thought that MATE has been useful for stimulating discussions with nothing preventing open dialogue.

When asked whether it would have been preferable to have used MATE as an individual or in a group, participants were equally divided, with half preferring group work and half preferring individual completion. In support of group work, comments included: "I think that MATE is more useful in a small informal group. The discussion stimulates us to reach solutions supporting our work." However, other participants saw benefits from individual completion: "To make a personal assessment, which does not always coincide with the general". There was a positive response to whether MATE could be used in a multi-disciplinary group (15 yes, 1 no), with participants commenting "It will be useful to hear opinion of various specialists" and "It's obligatory!".

**Relevance:** All participants thought that MATE was very relevant/relevant for their country and all except one thought it covered all the correct issues (this participant suggested adding a question about 'post-completion practice' (Continuing Professional Development). In relation to whether MATE could be useful and relevant for other Eastern European countries, all thought it would be either very relevant/relevant, especially "For countries where midwifery is not regulated as an independent profession". However, there was a note of caution expressed: that users of MATE would need to consider their country context, including professional regulation and legislation, in order for aspirations to be achievable: "You may have to comply with the country-specific conditions, so as not to discover the conclusions only good wishes".

## 5. Discussion

The process of using a co-design approach to develop, pilot and field-test MATE was extremely valuable. Engaging with stakeholders in face-to-face workshops allowed us to explore with potential users the possible benefits and limitations of using MATE in their country and to optimise its format, content and implementation. As others have indicated, involving end-users in the creation and design of studies is likely to increase their applicability and acceptability (Slattery et al., 2020).

The piloting phase enabled us to identify problems with the initial design and correct these prior to field-testing. These problems particularly related to some of the terminology. It was very important for us to reflect on our own ethnocentric bias in this respect and our assumption that terms were universal and would be commonly understood. For example, there were differing understandings of 'community care' and 'clinic', and although our UK preference was to use the phrase 'attending a birth' for the midwife's work during labour and birth, we came to realise that 'delivering a baby' was better understood.

This phase also revealed our assumption that the role and scope of practice of a midwife would be relatively similar across the European region. In particular, we expected that a midwifery qualification would enable a midwife to be 'hands on' at a birth as in the UK. However,

discussions with pilot phase participants showed that this was often not the case (see also Table 1) and that the potential to work to the full scope of practice as per the ICM Definition of the Midwife (ICM, 2017) was often constrained by regulation, insurance and interprofessional tensions in the various countries.

The field-testing stage enabled us to try out a refined version of MATE in 'real life' in Bulgaria, a country which the hosts had identified as needing support because of difficulties in student recruitment, limited midwifery scope of practice on qualification and over-medicalised childbirth. From this phase it was evident that most of the problems with format and terminology had been effectively dealt with following the pilot, and that using the MATE questions and prompts facilitated in-depth and lively discussions.

Throughout all the phases, informal feedback from all partners indicated that collaborating with MATE design and testing had been an affirming and effective experience. It was felt that using a co-design approach, with strong and authentic cross-country engagement from the outset, had ensured the cultural acceptability and appropriateness of MATE, as well as its relevance to country needs. Anecdotally, it was also evident that many participants personally valued the opportunity to 'have a voice' and contribute to a WHO project that could have wider impact. Slattery et al. (2020) identified similar positive end-user responses engaging in co-design. Contributors from all phases are acknowledged in person in the final document.

Following field-testing, the format and content of MATE was finalised and the tool was peer reviewed by colleagues in WHO European Regional Office. MATE was launched by WHO in May 2020, and is available in English and Russian from the WHO European Region website <https://www.euro.who.int/en/health-topics/Health-systems/nursing-and-midwifery/publications/2020/midwifery-assessment-tool-for-education-mate-2020>.

MATE now forms part of a menu of options available to countries wishing to strengthen midwifery education or develop midwifery education where none has existed previously. For example, the ICM offers the Midwifery Education Accreditation Programme MEAP (Nove et al., 2018) and Jhpeigo provides a Rapid Assessment Tool (Fullerton et al., 2016). It could be a valuable resource for member states who are developing midwifery education in accordance with the *WHO Framework for Action: Strengthening Quality Midwifery Education for Universal Health Coverage 2030* World Health Organization, 2019, as it fits well with the Step 2: 'gather data and evidence' step of the action plan (WHO, 2019, p. xi]. It thus has potential as a benchmarking tool and as a preparation activity for countries seeking support or advice from external organisations such as WHO. Although MATE was originally designed with the needs of the WHO European Region in mind, the questions it contains are not country specific and there is potential for it to be used globally.

As part of the ongoing evaluation of MATE, we have created a database to monitor usage. Users are asked to notify their interest via the WHO EURO office at [euronursingmidwifery@who.int](mailto:euronursingmidwifery@who.int).

Finally, we note that using MATE has potential for wider impact, as it could start conversations and political debates which might in turn lead to bigger changes in the organisation and delivery of maternity care. For example, the piloting of MATE in the Czech Republic stimulated the start of the *Quality of Care and Satisfaction of Women with Maternity Care Project (2021–2024)* <https://starfos.tacr.cz/en/project/NU21-09-00564>.

### 5.1. Limitations

This was a small study aimed at testing out a new self-evaluation tool prior to roll out. The three countries involved were selected based on their interest in strengthening midwifery education, as well as having existing relationships and connections with both the WHO CC and EMA. Participants in the workshops were purposefully selected by the country hosts and were likely to have been those who would be interested and

supportive. Purposeful selection of settings and participants was appropriate given the aim of the evaluation and the co-design approach and has the advantage of optimising authentic engagement. Although the findings should be treated with some degree of caution, we note that a range of views were expressed. The participants were able to give feedback both within the group setting (plenary feedback) and in private (online survey) and it was reassuring to see that there were differing perspectives (for example, in relation to whether MATE was best completed as an individual or in a group).

Language was likely to have been a particular limitation in this study. Responses to the Phase 2 online English language survey were limited, but a better response rate was achieved in Phase 3, where the questionnaire was translated into Bulgarian. Lack of financial resources precluded engaging translation and interpretation services for all the workshops and the evaluations, and we relied on the generosity and skills of our hosts to interpret and facilitate for us. This may have resulted in some information and feedback being 'lost in translation', in both directions.

## 6. Conclusion

Using a co-design approach has ensured that MATE has been developed as a culturally relevant, accessible and acceptable tool. This initial evaluation indicates that MATE can facilitate in-country discussion within professional groups, and also between different stakeholders such as midwives, obstetricians, policy makers and service users, encouraging dialogue on education of midwives as well as on the scope and role of midwifery and its regulation within countries. This supports the strengthening of midwifery education in accordance with WHO aims.

Next steps are a fully evaluated trial of MATE in a selected partner country, where we will continue to work collaboratively to optimize engagement and ensure cultural appropriateness.

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### CRediT authorship contribution statement

BH: conception and design of the study; acquisition, analysis and interpretation of data; drafting and revising the article, GT: conception and design of the study; acquisition, analysis and interpretation of data; drafting and revising the article, RW: design of the study, acquisition of data, drafting and revising the article, PT: design of the study, acquisition of data, drafting and revising the article, AB: design of the study, acquisition of data, drafting and revising the article, LL: design of the study, acquisition and analysis of data, drafting and revising the article, MJ: design of the study, acquisition of data, drafting and revising the article, All authors gave final approval of the version to be submitted, hunterb1 @cardiff.ac.uk.

### Author statement

I certify that all authors have seen and approved the final version of the manuscript being submitted. The article is the authors' original work, hasn't received prior publication and isn't under consideration for publication elsewhere.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Conflict of interest

None.

## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.nepr.2022.103376](https://doi.org/10.1016/j.nepr.2022.103376).

## References

- Fullerton, J.T., Johnson, P., Lobe, E., Myint, K.H., Aung, N.N., Moe, T., Linn, N.A., 2016. A rapid assessment tool for affirming good practice in midwifery education programming. *Midwifery* 34, 36–41. <https://doi.org/10.1016/j.midw.2016.01.008>.
- Homer, C.S.E., Friberg, I.K., Dias, M.A.B., ten Hoope-Bender, P., Sandall, J., Speciale, A. M., et al., 2014. The projected effect of scaling up midwifery. *Lancet Ser. Midwifery* 384 (9948), 1146–1157. Paper 2. 2014 Sep 20.
- ICM, 2017. Definition of midwifery. [https://www.internationalmidwives.org/assets/files/definitions-files/2018/06/eng-definition\\_of\\_the\\_midwife-2017.pdf](https://www.internationalmidwives.org/assets/files/definitions-files/2018/06/eng-definition_of_the_midwife-2017.pdf) (accessed 6/10/2021).
- Jokinen M., Vermeulen J. (2015) Investing in the future. Pan European Networks: Government, 14.
- Mivšek, P., Bašková, M., Wilhelmová, R., 2016. Midwifery education in central eastern Europe. *Midwifery* 33, 43–45. <https://doi.org/10.1016/j.midw.2015.10.016>.
- Nove, A., Pairman, S., Bohle, L.F., Garg, S., Moyo, N.T., Michel-Schuldt, M., Hoffman, A., Castro, G., 2018. The development of a global midwifery education accreditation programme. *Glob. Health Action* 11.
- Nove, A., Friberg, I.K., de Bernis, L., McConville, F., Moran, A.C., Najjemba, M., ten Hoope-Bender, P., Tracy, S., Homer, C.S.E., 2021. Potential impact of midwives in preventing and reducing maternal and neonatal mortality and stillbirths: a lives saved tool modelling study. *Lancet Glob. Health* 9 (1), e24–e32. [https://doi.org/10.1016/S2214-109X\(20\)30397-1](https://doi.org/10.1016/S2214-109X(20)30397-1).
- Renfrew, M.J., Malata, A.M., 2021. Scaling up care by midwives must now be a global priority. *Lancet Glob. Health* 9 (1), e2–e3. [https://doi.org/10.1016/S2214-109X\(20\)30478-2](https://doi.org/10.1016/S2214-109X(20)30478-2).
- Renfrew, M.J., McFadden, A., Bastos, M.H., Campbell, J., Channon, A.A., Cheung, N.F., et al., 2014. Midwifery and quality care: findings from a new evidence-informed framework for maternal and newborn care. *Lancet Ser. Midwifery* 384 (9948), 1129–1145.
- Sim, J., 1998. Collecting and analysing qualitative data: issues raised by the focus group. *J. Adv. Nurs.* 28 (2), 345–352.
- Slattery, P., Saeri, A.K., Bragge, P., 2020. Research co-design in health: a rapid overview of reviews. *Health Res. Policy Syst.* 18, 17.
- UNFPA, ICM and WHO , 2021 State of the World's Midwifery 2021: Building a health workforce to meet the needs of women, newborns and adolescents everywhere. New York: UNFPA. Available at: <https://www.unfpa.org/sites/default/files/pub-pdf/21-038-UNFPA-SoWMy2021-Report-ENV4302.pdf> (accessed 06/10/2021).
- World Health Organization, 2019. Framework for Action: Strengthening Quality Midwifery Education for Universal Health Coverage 2030. World Health Organization, Geneva.
- World Health Organization Regional Office for Europe , 2015. European strategic directions for strengthening nursing and midwifery towards 2020 goals. Copenhagen: WHO European Region [https://www.euro.who.int/\\_data/assets/pdf\\_file/0004/274306/European-strategic-directions-strengthening-nursing-midwifery-Health2020\\_en-REV1.pdf](https://www.euro.who.int/_data/assets/pdf_file/0004/274306/European-strategic-directions-strengthening-nursing-midwifery-Health2020_en-REV1.pdf)(accessed 06/10/2021).