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Expectations, experiences and contexts of European midwives pursuing a doctoral degree: a twenty-three-country exploratory survey

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Expectations, experiences and contexts of European midwives pursuing a doctoral degree: a twenty-three-country exploratory survey

Abstract

Background: Despite the increasing number of doctorally prepared midwives in Europe, particularly after the Bologna Declaration 1999, little is known about the context and experiences of their doctoral education.

Aim: To explore European initially qualified midwives' experiences with doctoral education, and the context of their education through their professional associations.

Design: A multi-country, exploratory mixed-method design.

Methods: An ethically approved web-based survey was used to collect data from midwifery associations and midwives in 33 European countries between October and December 2024. Descriptive statistics and thematic analysis were used to analyse the responses.

Results: Twenty- two midwifery associations from 19 European countries and 207 midwives from 23 European countries participated. Over the last two decades, there was an increase in the number of doctorally prepared midwives. Common reasons to gain doctoral qualifications included an interest in research, career progression, in particular in education, and improving healthcare. Midwives reported growing availability of European-wide opportunities for doctoral programmes, alongside an increase in the number of doctoral midwifery programs and supervisors with midwifery expertise. While many barriers were reported, effectively combining study with their personal life and support from family, friends, and colleagues, were highlighted as crucial factors in completing their doctoral studies.

Conclusion: This is the first study exploring the experiences of European midwives pursuing a doctoral degree. The findings highlight a need for universities to improve the collaboration with midwives' supportive networks as well as for the profession to reduce intraprofessional hostilities to enhance doctoral midwifery students' well-being.

Implications for the profession: Acknowledging challenges faced by these midwives is necessary to improve professional and institutional support in academia and midwifery.

Impact: Findings of this study inform strategies to improve doctoral education for midwives and, in this way, strengthen the contributions of midwives to maternal evidenced-based care development and healthcare innovations.

Reporting Method: The Consensus -Based Checklist for Reporting of Survey Studies (CROSS) was used to guide reporting.

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Patient or Public Contribution: This study did not include patient or public involvement in its design, conduct, or reporting.

Keywords: Midwives, Doctoral study, Academia, Europe, Maternity care, Bologna Declaration, Professionalisation, Professional autonomy, Combining work and family

Summary

What does this paper contribute to the wider global clinical community?

1. Foundational new knowledge about the context and the experiences of an increasing number of European midwives doing a doctoral study

2. New perspectives about the multiple challenges that European midwives encounter while doing their doctoral study, in particular lacking support and intraprofessional hostilities in academia and clinical practice

3. Further insights on how these challenges can be met, including the need for universities to improve collaboration with doctoral students' supportive network of family and friends, and change of midwives' current attitudes towards colleagues pursuing different career pathways

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1. Introduction

Worldwide, the number of nurses and midwives undertaking doctoral studies has significantly increased over the last decades (Kim et al., 2015; Geraghty & Oliver, 2018; Adnani, 2021). This trend is influenced by the growing recognition of the importance of discipline-specific research, the need to strengthen nursing and midwifery professional foundations, and the aim to enhance healthcare services through evidence-based practice (WHO, 2017).

Despite the increasing number of midwives pursuing doctoral degrees, little is known about their experiences, including motivations, challenges, and support systems. Understanding these factors is essential to improving doctoral programmes, resources, and academic pathways. Therefore, this study aimed to work in collaboration with midwifery organisations to explore European midwives' experiences of undertaking a doctoral programme.

2. Background

Doing research as a professional role was primarily initiated in the United States (USA) and the United Kingdom (UK) around the mid-twentieth century (Ernst, 1964; Robinson & Thomson, 1989). Midwifery research increased following calls from both women's healthcare providers and consumer movements, contributing to the growth of studies in maternity care (Cochrane, 1972; WHO, 1987). Consequently, opportunities for midwives to undertake doctoral studies arose, mainly in nursing, medicine, and public health (Robinson & Thomson, 1989).

In Europe, this development coincided with a call for a systematic evaluation of the effectiveness of maternity care interventions, led by researchers from the Oxford Pregnancy and Childbirth Database (later the Cochrane Collaboration) in the UK (Chalmers et al., 1989; Robinson & Thomson, 1989). As a result, midwives had opportunities to start doctoral studies, most of them supported and supervised by medical professionals. For example, Mary Renfrew undertook her doctoral study on breastfeeding in 1982 at the Medical Research Council's reproductive biology unit in Edinburgh (Crowther et al., 2009). Additionally, in collaboration with researchers from Oxford Pregnancy and Childbirth, Sleep et al. (1984) conducted the West Berkshire perineal management trial. In the Netherlands, Iedema obtained a doctorate in 1996 on integrated care at home for women with pregnancy complications, a study initiated by a medical professor (van Veen, 2014). Simultaneously, in Sweden, doctoral studies became an option for midwives when midwifery education was integrated into universities in 1977 (Waldenström, 1995). However, for most midwives in Europe, pursuing a doctoral degree was hardly a reality before 1999.

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A major turning point in this progress was the Bologna Declaration of 1999 (Vermeulen et al., 2019; Mivsek et al., 2022). This European treaty reformed higher education programmes into a common structure, aiming to enhance the employability of graduates and international competitiveness (European Ministers in charge of Higher Education, 1999). This harmonisation process led to the academisation of midwifery education, transitioning from vocational training to higher academic education, including undergraduate, graduate, and doctoral degrees (Vermeulen & Vivilaki, 2021; Migura, 2024). The European Qualifications Framework (2005) further defined the professional knowledge, skills, and autonomy expected at different education levels, including bachelor's (level 6), master's (level 7), and doctoral degrees (level 8), which many countries adopted (Qualification Assurance Agency, 2024; Schweizerische Bundesrat, 2014).

With the shift from vocational to academic programmes, a growing demand emerged for midwives to pursue doctoral studies. It became evident that evidence-based midwifery education and care required scientific research within the discipline (Luyben et al., 2013; Begley et al., 2014; Mahieu, 2024; Ozbek & Ertekin Pinar, 2020; Baskova, 2022). Doctorally prepared midwives were expected to contribute to professional development through academic teaching and research (Vermeulen & Vivilaki, 2021; Sauvegrain et al., 2024). Some studies reported strategic changes to achieve this at local levels. For example, Begley et al. (2014) documented efforts to increase the number of midwifery teaching staff in Dublin, Ireland, raising the percentage of staff with doctoral degrees from 31% in 2006 to 79% in 2010 while expanding funded research projects and peer-reviewed publications. Others, like Sauvegrain et al. (2024) in France, developed national strategies for midwifery research.

Following the implementation of the Bologna Declaration, the number of midwives with doctoral degrees increased across Europe. For example, Sinclair (2006) reported 60 midwives with doctoral degrees in the UK, while in France, the number was 15 (Goyet, 2018). Smaller numbers were reported in Slovenia, the Netherlands, Switzerland, Germany, and Austria (Mivsek et al., 2016; Luyben et al., 2013). More recently, Belgium reported approximately 20 midwives with doctoral degrees (Goemaes et al., 2025). However, little is known about the proportion of midwives with doctoral degrees relative to the total midwifery workforce in most European countries.

Despite the increasing number of midwives pursuing doctoral studies, many faced significant challenges, including limited accessibility, programme content limitations, and the absence of clinical academic pathways (Trussell et al., 2019). In many countries, specific doctoral programmes in midwifery do not exist, and few midwives work in academia (Mahieu, 2024).

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As a result, European midwives had to undertake doctoral studies in various disciplines (Carpenter, 2021; Luyben et al., 2013). This diversity led to variations in doctoral titles, research focus, study duration, and programme requirements (Luyben et al., 2013; Mahieu, 2024). According to an international study on nurses and midwives undertaking doctoral studies, matching students with supervisors with relevant expertise was crucial for success (Geraghty & Oliver, 2018). Some midwives even traveled abroad for their studies, often facing language and cultural barriers (Adnani, 2021).

In addition to academic challenges, midwives also faced personal struggles during their doctoral education. Although research on these experiences is limited, an Australian study (Geraghty et al., 2018) highlighted the importance of adequate support systems, including supportive supervisors and peer networks. It is also recognized that female doctoral students encounter structural and attitudinal barriers (Brown & Watson, 2010; Ocak Akturk et al., 2024). In a qualitative study on French midwives, Mahieu (2024) identified several obstacles, including funding shortages, time constraints, lack of recognition for doctoral work, and work-life balance difficulties. However, many midwives overcame these challenges through their passion for the profession and commitment to high-quality care. Similarly, McNeill et al. (2023) conducted a global study with over 50 narrative interviews, emphasizing the resilience and dedication of doctoral midwives, whose research often positively impacted women, children, and the midwifery profession**.**

3. The Study

The aim of this study is to explore the experiences of European midwives, who were initially qualified in Europe, with doctoral education and the broader context of their education through their professional associations. The objectives include examining their motivations, challenges, and support systems, exploring their academic and professional pathways, assessing the role of midwifery professional associations in supporting doctoral education, and investigating the impact of doctoral education on midwifery practice, education, and research.

4. Methods

4.1. Design

An exploratory research design was used to map the current situation and therefore, describing the state of play was necessary. Furthermore, this foundational work will enable more in-depth future research. Following a literature review of doctoral nursing and midwifery students' experiences (van Dongen et al 2024), data collection occurred through a web-based survey consisting of two self-constructed questionnaires. A pilot test was conducted with ten doctorally

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prepared midwives in Europe, and one adjustment was made based on their feedback to clarify unclear wording.

The first questionnaire was sent to midwifery associations in European countries. It included ten questions focused on their engagement, support structures, and opportunities for midwives pursuing doctoral studies in their respective countries. The second questionnaire targeted individual midwives with a doctoral degree completed in or outside Europe. The latter was divided into two sections: Section one covered demographic information (age, gender, country of professional registration), previous education, and work experiences. This section included themes such as before doing a doctoral degree, holding a nursing qualification, and holding a Master's degree. Section two focused on the administrative process, including research focus, supervision, thesis development, and institutional support. Themes included the doctoral study (8 questions), expectations and career advice during the doctoral study (9 questions), thesis supervision, and support (8 questions), other experiences, impact, and reflections (11 questions). After each theme, participants had the opportunity to provide additional written comments. At the end of the survey, participants were invited to engage in further research by agreeing to an online interview.

Supplementary File 1: Questionnaire Associations

Supplementary File 2: Questionnaire Doctorally prepared midwives

4.2. Participants

Each European country has at least one midwifery association, which is a member of the European Midwives Association (EMA). All associations were invited to participate in the survey with the assistance of the EMA Board, which agreed to facilitate this study.

The individual participants were all midwives with doctoral degrees who had received their initial midwifery education in Europe. The inclusion criteria were:

- Being a registered or licensed midwife,

- Having received initial midwifery education in a European country

- Holding a doctoral degree (Doctor of Philosophy -PhD or equivalent) from any institution

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Doctorally trained midwives, who were initially educated as midwives in Europe, were included regardless of where they completed their doctoral studies or were employed in another country. This study also included retired midwives and those who had moved into other fields to ensure a comprehensive understanding. Midwives still pursuing their doctoral studies at the time of data collection were excluded.

4.3. Data collection

Data were collected through an exploratory design with a web-based semi-structured survey hosted on Qualtrics[XM]. The questions were both open and closed. Access was gained through 33 European countries with 44 national midwifery professional associations, all members of the EMA. The study was presented to EMA member countries during their General Meeting in Reykjavik, Iceland, in September 2024. In early October 2024, invitations to participate and the survey link were sent to the member associations. These associations served as the initial point of contact, or access portal, to enable sampling of doctorally prepared midwives. Associations were asked to distribute a survey link to eligible midwives who were members and a reminder was sent to the associations in the third week of October.

Subsequently, snowball sampling was used to gain access to midwives who were not members of professional organisations as well as specific targeting of national doctoral organisations, societies of doctoral or research midwives, and the personal networks of our project group. A final reminder was sent in the last week of November 2024. The survey was closed on December 8th, 2024.

4.4. Data analysis

Descriptive statistics and thematic analysis were used to analyse the data. Quantitative data were summarised using descriptive statistics, presented as frequencies and percentages, without inferential statistical tests. Thematic analysis was conducted using NVivo version 20 (QSR International), with qualitative data coded into recurrent themes aligned with the study aims. Themes were further analysed for similarities, differences, and patterns (Braun and Clarke, 2006). The results were discussed in regular online meetings of the research group.

4.5. Ethical considerations

Ethical approval was obtained from the University Hospital Brussels and the Vrije Universiteit Brussel (VUB), Belgium (BUN: 143 202 4000 0200). Informed consent was gained from the

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participants through their agreement to participate on the start page and completion of the survey. Participants could decide not to answer a question or withdraw from the study at any time. All data were stored in a secured and locked server of the Vrije Universiteit Brussel (VUB), only accessible to the researchers. No data were shared or discussed with other colleagues, to maintain anonymity all identifying information was removed by a researcher (JV).

5. Results

5.1. Midwifery associations

Twenty-two out of 44 (50%) midwifery associations from 19 of 33 (58%) European countries participated in the survey, with three associations representing Turkey. Multiple responses were received from the associations of Denmark, Iceland, Malta, Netherlands, Slovakia, and Turkey.

5.1.1. National government and health services

None of the participating associations confirmed the presence of a National Qualification Framework like the European Qualification Framework (2005). Six associations (Finland, Iceland, Ireland, Italy, Lithuania, Slovakia) reported that their national government or healthcare services planned to employ doctorally prepared healthcare professionals within the health services to improve or enhance the quality of healthcare. All associations, except Luxembourg, stated midwives could undertake a doctoral study in their countries. Midwifery doctoral studies were available in several countries (in Denmark, France, Iceland, Ireland, Italy, Lithuania, Malta, the Netherlands, Sweden, Turkey, and the United Kingdom) as well as nursing, public health, health sciences, medicine, economics, and social sciences. Estimating the number of midwives with a doctoral degree in the 19 participating countries was challenging. Associations of three countries (Iceland, Netherlands, Turkey) provided various answers, and four countries (Lithuania, UK, France and Poland) could not provide estimates. Luxembourg, Slovenia, Malta and Italy reported an estimated number of up to 10 doctoral midwives, with Belgium, Ireland, Slovenia and an anonymous country up to 30. Associations of three countries (Denmark, Finland, and Greece) mentioned a number between 30 and 50, and Sweden reported an estimate of 150 to 200 midwives with a doctoral degree.

Approximately one-third of associations noted available positions for doctorally prepared midwives within the maternity care services. All participating associations reported that doctorally prepared midwives predominantly worked in education (n=22, 100%). Work in research, management, and policy/regulation (n=13, 59%), or midwifery practice (n=12, 55%)

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was less mentioned. Greece mentioned available positions for doctorally prepared midwives in public health, and the Polish association reported that there were no positions at all within the healthcare system for doctorally prepared midwives in their country. About half of all associations (n=12, 55%) believed midwives received support, financially or in terms of time for pursuing a doctoral study. However, the qualitative comments to these questions highlighted many inconsistencies in this perception. Midwives reported starting the study on their own initiative and, in many cases, funding themselves without protected study time. They also reported applying for a variety of research funds or scholarships through their university. Some secured research positions while studying, but healthcare system funding was rarely available.

5.1.2. The midwives' associations

Eleven midwifery associations (50%) supported the employment of doctorally employed midwives at the national level within the maternity care services. Similarly, eleven associations (50%) had a vision or plan for how to implement the knowledge and skills of doctorally prepared midwives to advance the midwifery profession. All associations viewed the future roles of doctorally prepared midwives in education or research, but also in management (n=12, 54.5%), midwifery practice (n=10, 45.5%) and policy/ regulation (n=9, 40.9%). Nine midwifery associations (41%) indicated they financially support midwives undertaking a doctoral study, some fully or partially after midwives apply for their funding schemes. However, this funding was not universal, and many could not afford to offer their midwives funding support and stated this. Most commented that they believed midwives could apply for funds from other sources

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5.2. Doctorally prepared midwives

The second survey was sent to doctorally prepared midwives through the midwifery associations and personally during snowball sampling. This questionnaire captured their experiences, complementing the associations' perspectives and providing an in-depth view of their doctoral journeys.

The survey included 207 participants from 23 European countries, predominantly identified as female (n=190, 92%).

Map 'Participating midwives across 23 countries' to include here.

Participants ranged in age from 30 to 75 years, with just four individuals stating they were retired. The largest age group was between 41 and 50 years (n=64, 32%).

Table 1. Demographic and educational characteristics of participants

		n (%) 207(100%)
Gender	Female	190 (92)
	Male	14 (7)
	Other	3 (1)
Age (years)	31-40	41 (21)
	41-50	64 (32)
	51-60	52 (26)
	>61	40 (20)
Member of a midwifery association	Yes	189 (91)
	No	18 (9)
Holding a midwifery qualification as a primary degree	Yes	118 (57)
	No	89 (43)
Holding a nursing qualification	Yes	63 (30)
	No	144 (70)
Holding a Master's qualification	Yes	183 (88)
	No	24 (12)

Table 2. Country of initial midwifery education

n = 207

Country	**n**	**Country**	**n**
Austria	1	**Netherlands**	5
Belgium	10	**Norway**	7
Cyprus	1	**Poland**	11
Denmark	8	**Portugal**	1
Finland	5	**Romania**	2
France	14	**Slovenia**	1
Germany	13	**Spain**	12
Greece	4	**Sweden**	21
Iceland	2	**Switzerland**	2
Ireland	4	**Turkey**	20
Italy	1	**UK (incl. England, Scotland and Northern Ireland)**	58
Malta	4		

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The majority were educated as a midwife in the UK (n=58, 28%), followed by Sweden (n=21, 10%), Turkey (n=20, 9%), France (n=14, 7%) and Germany (n=13, 6%). A similar distribution was seen in their current professional activity, with most practising in the UK (n=47, 23%), Sweden (n=21, 10%), and Turkey (n=20, 9%). Most participants (189, 91%) were members of a midwifery association, holding a primary midwifery degree (n=118, 57%). Nursing was the most common among those with prior qualifications (n=63, 30%). Many participants had extensive midwifery experience before pursuing their doctoral studies, with the majority having worked 6–10 years (n=71, 35%) or 11–15 years (n=45, 22%). A significant proportion held a Master's qualification (n=183, 88%), predominantly in midwifery (n=74, 40%), public health (n=24, 13%), or research (n=19, 10%).

5.2.1. The doctoral study and expectations

Most doctoral midwives studied part-time (n=114, 55%), while 65 (31%) were full-time. The remainder had a mix of part-time and full-time study modes. Doctoral studies typically lasted four years (n=80, 40%), with some completing in three (n=31, 16%) or five years (n=41, 20%). Forty-two (21%) midwives reported that their study took more than five years, with the longest duration being as long as 12 years. Common disciplines of study were midwifery (n=85, 41%), medicine/obstetrics (n=33, 16%), and public health (n=19, 9%). Many midwives balance their studies with work in education, research, midwifery practice or a combination of these. The majority held a PhD (n=162, 81%), with others earning different doctoral titles, as defined in their respective countries or disciplines of study.

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Table 3. Characteristics of doctoral studies

		n (%) 207 (100)
Duration of doctoral study (years) (n=198)	3	31 (16)
	4	80 (40)
	5	41 (20)
	>5	48 (24)
Academic discipline of doctoral study	Midwifery	85 (41)
	Medicine/obstetrics	33 (16)
	Public health	19 (9)
	Nursing	14 (7)
	Other	59 (28)
Mode of doctoral study completion	Part time	114 (55)
	Full time	65 (31)

	Other	28 (14)

The answers to the question about their expectations for pursuing a doctorate revealed a wide spectrum of professional and personal drivers. The most common reason was an interest in research and academic work (n=157, 76%) with career progression another significant motivator (n=118, 57%), improving healthcare (n=100, 48%), and advancing midwifery education (n=73, 35%) were also important factors. Additionally, 51 (25%) participants pursued a doctorate due to a requirement for teaching at the university level, and 33 (16%) cited the desire to undertake research as their primary reason. Many hoped to advance in higher education, with aspirations to become professors, contribute to midwifery education, or integrate research with clinical practice. The doctoral degree was seen as a pathway to career advancement and leadership roles but also as an opportunity to have more professional influence and, in this way, be able to improve clinical midwifery practice.

5.2.2. Thesis supervision and support

Most participants were able to self-select their supervisors, (n=128, 62%) whilst the remaining (n=79, 38%) did not have this option. A substantial portion of the participants had a midwife as a supervisor or part of their supervisory team (n=120, 58%), highlighting the importance of midwifery expertise in their doctoral studies. Most participants (n=177, 86%) could choose their own research topic for the doctoral study. However, 30 participants (14%) did not have the same level of choice over their research topic. Most participants felt supported throughout their study by their supervisors (n=179, 87%).

Of the 207 participants, only 75 midwives (36%) reported receiving career advice during their doctoral study. They primarily cited supervisors, colleagues, advisors, and institutional programs as sources of advice. Many highlighted issues with the applicability or timing of this advice, or its relevance to their career context or clinical practice. Among the 75 midwives who received career advice, 65 (87%) found it useful.

Table 4. Doctoral supervision, support, and experiences

		n (%) 207 (100)
Did you have a choice of research topic?	Yes	177 (86)
	No	30 (14)
Did you have a choice of supervisors?	Yes	128 (62)

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	No	79 (38)
Did you have a midwife as a supervisor/part of a supervisory team	Yes	120 (58)
	No	87 (42)
Did you feel supported by your supervisor(s)?	Yes	179 (87)
	No	28 (13)
Did you feel supported by your midwifery colleagues?	Yes	149 (72)
	No	58 (28)
Have you experienced any hostile or negative treatment while doing your doctoral study?	Yes	71 (34)
	No	136 (66)

5.2.3. Combining study with personal and family life

Out of 207 participants, 170 (82%) reported having family commitments during their doctoral study. Undertaking doctoral studies significantly impacted family life, often creating a challenging balance between academic demands and personal responsibilities. Many participants experienced reduced time with family, emotional strains, financial burdens, and missed milestones, with some reporting tensed relationships or even divorce.

'I was only married with no kids, so my husband was supportive. Nevertheless, sometimes he "complained" that he sees me in the same position every day with an open laptop'. (P72)

'We no longer have a normal life while we do our doctorate. It is very difficult to be carrying out research, working 40 hours a week and managing a family'. (P106)

Strong family support, particularly from spouses, was important and partners often took on additional responsibilities:

'I have received unconditional help from my husband and daughters. They have perfectly understood my need to dedicate time to the PhD (as now with my work as a professor)'. (P125)

Many worked through weekends, holidays, and evenings, leading to strained relationships, health challenges, and limited socialisation. Flexible study schedules allowed some participants to better manage family commitments.

'Challenging, difficult to manage time, family is my priority therefore study often done late at night or early in the morning 4 am' (P81)

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While the experience was described as stressful and isolating at times, it also brought personal fulfilment, improved work-life balance for some, and a sense of achievement shared with supportive loved ones.

'Difficult, juggle, guilt - but also, role-model for my children and family, pride'. (P199)

While some cited personal growth, enhanced professional skills, and new opportunities, others experienced isolation, burnout, or mental health struggles.

'I call it 'PhD jail', I felt that for the duration of the PhD, I was locked up and had to say no to many social events, holidays, rest, etc. (P206)

'Burnout, stress, depression, moody, …' (P82)

The experience often required sacrifices, including reduced hobbies, missed milestones, and financial pressures.

'Time surrendered to doctoral study was time removed from significant others, time I'll never get back with people who have since passed'. (P79)

The balance between challenges and rewards varied widely among participants.

5.2.4. Other challenges and hostilities

Out of 207 participants, 149 (72%) felt supported by their midwifery colleagues while undertaking their doctoral study. Support varied greatly amongst the 138 participants who provided further details. Some received practical help with their research, such as assistance with data collection, recruitment, and time adjustments for study commitments. In contrast, others experienced personal emotional support or encouragement, with colleagues showing interest in their research.

'They [colleagues] supported me, so I did not think I was alone in my process and motivated me to continue my way. They offered me tea or Turkish coffee, and they did not spare me their smiling faces. These were very special; I felt that I was not alone and that I was strong'. (P172)

'They always asked about study and helped recruiting participants and collecting data' (P18)

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Some needed additional support to cope with their study's pressure, highlighting the complex and sometimes difficult nature of pursuing a doctorate in midwifery.

'It affected my mental health: the intensity of it. […] I had some support through the UK disabled student's framework […] I was on antidepressants. It meant I felt pressure to constantly be studying and analysing and writing etc, so I had very little social life'. (P42)

The support experienced mainly varied amongst the participants. Some highlighted a variation between workplace environments, mostly mentioning university and clinical practice.

'I work half time in a hospital and half time in a university. Clinical colleagues were surprised, impressed, not really interested, questioned why I would bother. Academic colleagues were pleased, interested, supportive'. (P32)

Another midwife noted a change in the level of support that became most obvious when she was at the data collection stage.

'Although most of the colleagues showed enthusiasm in the beginning, at the end no one helped. I had asked them to cooperate in collecting samples. They collected the first 2-3 days and then always said "I forgot". At the end I was 24/7 on call and collected all the samples on my own. I spent 18 months to collect the samples'. (P72)

Support varied with some colleagues offering positive reinforcement and others being less engaged, sometimes due to power dynamics, competition, or a lack of understanding about the demands of doctoral study. However, many also faced challenges such as jealousy, bullying, lack of understanding, and even active obstacles, such as a reluctance to cooperate or disrupt data collection.

Among the 207 participants, some (n=71, 34%) reported experiencing some form of hostile or negative treatment during their doctoral studies. From the 64 detailed comments, several themes emerged. Midwives reported hostility and challenges, including bullying, exclusion, scepticism about their studies, and lack of institutional support:

'My supervisors (midwives) actually asked me to postpone having children until my PhD was finished. I was 30 years old then and did not listen to their advice but it sure affected me negatively. I had one child during my doctoral studies, and I felt that was quite demanding,

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however I had PhD colleagues around me who also had small children who were very supportive' (P149)

Issues ranged from professional jealousy and dismissive attitudes to supervisory neglect and heavy workloads, highlighting systemic and interpersonal barriers to their study.

'...management refused to provide me with clinical hours to support me keeping clinical through. I had to stay on bank hours. 2 years into this I returned to nursing as they offered me a substantive 12 hour contract a week, midwifery refused'. (P188)

'Colleagues - happy and supportive; managers were unhelpful, obstructive and isolated me'. (P115)

'...whilst working clinically i was placed in situation that were difficult and received hostile comments such as –' well you are doing a PhD you should know' [...]As though they wanted to highlight that as I was studying full time I was no longer close to clinical' (P188)

Given these experiences, the question of whether these doctoral midwives would undertake such a study if they had known everything beforehand was raised.

5.2.5. Decision to pursue doctoral studies again

When asked whether they would choose to start a doctoral study if they were to revisit their decision, 180 (87%) participants indicated they would still pursue this path, while 27 (13%) stated they would not.

'It was the best decision I ever made. I love research and have had the glorious opportunity to support many PhDs in midwifery since completion of my own PhD. This has kept me going despite so many cruel people who have continually tried to block my career' (P8)

'Completing the doctorate was the most fulfilling, professionally transformative experience I have had. It has made me a better clinical and academic midwife and has enabled my personal growth in a way I could not have anticipated. It has also opened doors which I had not anticipated in academic and clinical research work' (P32)

Of the 27 (13%) stating they would not, some were more critical.

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"Unclear really. It seems to me that the only place for doctoral midwives is academia. If you want to remain in clinical practice there's nowhere to go." (P121)

Furthermore, when asked if they would recommend doctoral studies to other midwives, an overwhelming majority, 190 (92%) participants affirmed their recommendation.

6. Discussion

This is the first study to map European midwives' experiences pursuing a doctoral degree. In some countries midwives already had opportunities to undertake a doctoral study before the Bologna Declaration (1999), however, for most European midwives this only became an option after its implementation (Vermeulen et al 2019). Against the background of professionalisation, the data of 22 midwifery associations in 19 countries (58%) provided a sense of the context in which midwives undertook their doctoral journeys. Few associations could report an exact number of midwives with a doctoral degree, and none could confirm the existence of a national qualification framework outlining their competencies. While more doctoral midwives working in academic education and research were noted, the responses also highlighted the need to create more appropriate positions in health care and maternity care practice (Kim et al 2022; de Kok 2024; Watson et al 2024). The fact that half of the countries provided the opportunity to pursue a doctoral study in midwifery underscores the academic progress of the profession over the last decades.

Individual doctoral midwives, from 23 countries, reported on their experiences of undertaking doctoral studies. Ocak Akturk et al. (2024), Carpenter (2021), Mahieu (2024) and Trussell et al. (2019) are a few national European studies that have addressed these experiences previously, inclusive of a variety of disciplines, programme requirements and titles, and a lack of midwifery supervisors. However, the results in this study showed positive developments in midwifery doctoral education in many countries. Most midwives held a doctorate, chose their own research topic, and more than half chose their own supervisor, and had midwives in their supervisory team. Other higher education, midwifery, and nursing studies have highlighted the importance of matching students with supervisors with relevant professional expertise (Geraghty & Oliver 2018; Mahieu 2024; van Rooji et al. 2021). Another aspect highlighted in the literature was the challenges of studying in a foreign country and language (Adnani 2021; Amano et al. 2023). However, the results of this current study suggest progress in this regard as well, with most midwives able to undertake their study in their own European country.

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Timing of when, and how, to study was also reported as a challenge in the current study. Most participants were women, aged between 41 and 50 years, who pursued their doctoral study after 6 to 10 years of professional experience as a midwife. Many midwives pursued part-time doctoral studies, to manage academic demands alongside family responsibilities and work commitments. Several studies have addressed the burden of doing a doctoral study and the well-being of the doctoral student in general (Haynes et al. 2012; Jairam et al. 2012, Rockinson-Szapkiw et al. 2018; Prendergast et al. 2023). Haynes et al. (2012), Carter et al. (2013), Wollast et al. (2018) emphasised the importance of balancing multiple roles, particularly for female students. In order to do so, the significance of support networks is well documented. Guidance and career advice from universities and academic staff are considered essential (Haynes et al. 2012; Jairam et al. 2012). Our findings suggest that institutional support in this area still requires improvement. While most participants were satisfied with their supervision, only one-third reported receiving career advice, and only half of them found it useful.

Secondly, family support plays a crucial role in doctoral students' persistence and well-being, and thus the completion of a doctoral degree (Jairam et al. 2012; Rockinson-Szapkiw et al. 2018; Rockinson-Szapkiw et al. 2019). Most midwives in our study experienced the demands of doctoral research as very time-consuming, limiting their ability to engage in personal and family activities. Partners often assumed additional responsibilities to support the midwives, some participants even reported strained or broken relationships, caregiving burdens or the loss of loved ones during their studies. Similar subsequent experiences were mentioned in the phenomenological study of Rockinson-Szapkiw et al. (2018) amongst eleven female doctoral students in the United States. Based on this, Rockinson-Scapkiw (2019) developed the Doctoral Academic-Family Inventory as a tool for academic institutions to assess doctoral students' familial environment and support needs.

A third source of support, involving an expanded network of personal friends, academic colleagues, and colleagues from midwives' working environments, varied widely in the current study. While 72% felt supported by their midwifery colleagues this way, 28% did not. To succeed, Jairam et al. (2012) recommended building a close-knit network of friends in academia in order to support students during the journey and help them cope with the competitive culture, which might be different from the previous clinical working environments. In the current study, 34% of participants reported experiencing some form of negative or hostile treatment during their doctoral studies. While some mentioned tensions with academic colleagues or peers, the majority reported experiences of bullying, exclusion, or negative treatment by colleagues and

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management. Whereas the competitive academic environment may explain some forms of hostility (Jairam et al. 2012; Prendergast et al. 2023), hostilities in clinical practice have been reported but remain little understood. Studies on bullying in nursing and midwifery (Gillen et al. 2008; Gillen et al. 2009; Embree & White 2010; Brailey et al. 2014, Taylor 2016, Capper et al. 2020) suggest multiple contributing factors, including hierarchical workplace structures, educational differences, and theory of oppressed group behaviour (Purpura et al. 2012; Leap 1997). These factors may be particularly relevant for midwives pursuing doctoral studies. Pursuing a doctoral degree may be perceived as challenging traditional hierarchies, leading to colleague resistance or resentment. The "tall poppy syndrome "phenomenon, in which individuals who achieve success are cut down by their peers, may also contribute to negative treatment (Purpura et al. 2012; Leap 1997). To address these challenges, targeted interventions such as mentorship programs, leadership training for midwives in academia, and awareness campaigns should be implemented. Further research is needed to explore this phenomenon from doctoral midwives' perspective and develop strategies to mitigate hostility and promote a more supportive and professional culture.

Despite these challenges and personal sacrifices, more than 91% of participants stated that they would choose to pursue a doctoral study again. This high level of motivation is particularly striking given the adversities many faced. Studies on doctoral students' well-being highlighted similar motivation and perseverance to academic and professional goals, though motivation might vary by discipline, gender and maturity (Steele et al. 2005; Oswalt et al. 2007; Lin 2016; Rockinson-Szapkiw et al. 2018). Mahieu's (2024) study of doctoral midwives in France and Ocak Akturk et al.'s (2024) exploration of midwives' attitudes towards postgraduate education in Turkey reported comparable findings. In the present study, most midwives pursued their doctoral education out of a strong interest in research, academic work and midwifery education. They were also highly motivated by the desire to increase their professional influence, drive healthcare innovation, and improve clinical midwifery practice. This drive was mirrored in their reflections on their doctoral journeys, which highlighted increased confidence, competence and career opportunities.

The increase in doctoral midwives and improved supervision opportunities contribute to advancing midwifery education and directly impact clinical practice, midwifery leadership, and evidence-based practice. Doctoral midwives are well-positioned to drive innovation in maternity care, influence healthcare policies, and strengthen the integration of research into clinical settings. Furthermore, interdisciplinary collaboration with fields such as obstetrics,

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public health, and social sciences could enhance midwifery research and its broader impact on healthcare systems. Future studies should focus on cross-country comparisons to identify best practices and further improve midwifery doctoral education, ensuring that midwives across different regions have the necessary resources and support to contribute meaningfully to their profession.

Individual doctoral midwives in all positions and midwifery associations need to work increasingly together in the future to enhance the support for midwives starting and completing doctoral qualifications. Through this combined strength, experiences can be shared, learnt from and improved for the next research generation across all areas where midwives work.

Strength and Limitations

As a strength, this study represents a first attempt to map the experiences of doctorally prepared midwives in Europe. It marks the beginning of mapping the doctoral journey of midwives and tracking their clinical and academic progress and creating an overview of these midwives and the expertise they have developed. We hope to be able to add additional doctorally qualified midwives in the next years whilst aiming to create a European network of doctorally prepared midwives.

Limitations were particularly met in sampling and data collection. Sampling was initially started through all members of the European Midwives Association. This approach has been used in a previous study and was considered the most politically appropriate. However, during the study, it became clear that additional sampling methods were needed, as associations' reach out was limited. Snowball sampling was used after a month through personal networks and several other doctoral organisations, resulting in three times as many participants.

Another limitation was that the survey was carried out only in English language. Whereas proficiency in English is a prerequisite for doing an academic study in Europe, this might have discouraged some midwives from participating. Also, due to survey format limitations, further qualitative research is planned to explore their experiences in more detail.

7. Conclusion

This study on the journeys of European midwives undertaking doctoral studies represents a first effort to map their experiences as pioneers. The results revealed an increase in the number of doctorally prepared midwives across Europe who will play a key role in mentoring the next generation of midwives. Progress was evident in the growing availability of European-wide

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opportunities for doctoral programs, alongside an increase in the number of doctoral midwifery programs and the number of supervisors with midwifery expertise.

Support from family, friends, and colleagues was highlighted as a crucial factor in successfully completing doctoral studies. In this regard, universities are encouraged to strengthen collaboration with these supportive networks to enhance students' well-being during their studies. Thus, while the path to a doctoral degree presents significant personal and professional challenges, it is also a transformative experience that enhances European midwives' ability to contribute to education, research, and clinical practice innovations.

However, against the background of the professionalisation of midwifery in Europe, it is important to reduce intraprofessional hostilities in nursing and midwifery and change current attitudes towards colleagues pursuing different career pathways. Changing these attitudes may be accompanied by the creation of new, influential, and innovative roles for doctorally prepared midwives in all areas. More research is needed in this area and will contribute to the development of a new European culture for the professional growth of midwifery, ultimately benefiting the health and well-being of future families and their children.

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Supplementary File 1: Questionnaire Associations

Dear colleague,

As we aim to map the experiences and work of doctorally prepared midwives in Europe, we invite you to be part of this study as a representative of your association in the EMA. Your input is crucial to gain an understanding of the experiences and work of doctorally prepared midwives in Europe. The online questionnaire exists of closed and open questions and will take a maximum of 15 minutes .The results will be processed anonymously and is in line with GDPR regulations. We hope to receive your answers by November 8th 2024 and we wish to thank you in advance for your help! If you have further questions please contact Joeri Vermeulen (joris.vermeulen@vub.be or +32/475.55.74.68).

Thank you in advance for your cooperation,
Ans Luyben, Joeri Vermeulen, Rhona O'Connell, Maeve O'Connell, Marlene Sinclair, Victoria Vivilaki, Maaike Fobelets, Valerie Fleming

I have read the information carefully, agree with what has been described, and give my informed consent to participate in this research

Yes
No

What is the name of your association?

1. Is there a national qualification framework (like the European Qualification Framework 2005) in your country?

Yes
No
I do not know

2. Is there a national government or health care plan to employ doctorally prepared health care professionals within the health services (to improve or enhance the provision of quality health care)?

Yes
No
I do not know

3. Can midwives undertake a doctoral study in your country? This could be in midwifery or a different discipline.

Yes
No
I do not know
If yes, In which discipline midwives undertake a doctoral study in your country?
Midwifery
Other
Any comments?

4. How many midwives in your country have obtained a doctoral degree?

0-10
10-30
31-50
51-75
76-100
101-150
151-200

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201-300
301-400
401-500
>500
I do not know

5. Are there positions within the maternity care services for doctorally prepared midwives?
Yes
No

If yes, are the doctorally prepared midwives involved in: (multiple answers possible)
Education
Research
Practice
Management
Policy/regulation
Others

6. Do midwives obtain financial support for their doing a doctoral study?
Yes
No
I do not know

7. Do midwives obtain time for their doing a doctoral study?
Yes
No
I do not know
Any comments?

8. Does your association support the employment of doctorally prepared midwives at the national level within the maternity care services
Yes
No
I do not know

9. Does your association have a vision or plan of how to implement the knowledge and skills of doctorally prepared midwives in order to advance the (status of the) midwifery profession?
Yes
No
I do not know

If yes, does the association see this role for midwives involved in: (multiple answers possible)
Education
Research
Practice
Management
Policy/regulation
Others

10. Does your association support (finance) the education of doctorally prepared midwives
Yes
No
Any comments?

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Supplementary File 2: Questionnaire Doctorally prepared midwives

Dear colleague,

As we aim to map the experiences and work of doctorally prepared midwives in Europe, we invite you to be part of this study as a doctorally prepared midwife. Your input is crucial to gain an understanding of the experiences and work of doctorally prepared midwives in Europe. The online questionnaire exists of closed and open questions and will take a maximum of 20 minutes. The questionnaire includes 3 sections, at the end of each section there is an option for additional comments. The results will be processed anonymously and is in line with GDPR regulations.
Your input is very important to gain an understanding in the experiences and work of doctorally prepared midwives in Europe!
We hope to receive your answers before November 8th and we wish to thank you in advance for your help! If you have further questions please contact Joeri Vermeulen (joris.vermeulen@vub.be or +32/475.55.74.68).

Thank you in advance for your cooperation,
Ans Luyben, Joeri Vermeulen, Rhona O'Connell, Maeve O' Connell, Marlene Sinclair, Victoria Vivilaki, Maaike Fobelets, Valerie Fleming

I have read the information carefully, agree with what has been described, and give my informed consent to participate in this research.
- Yes
- No

Demographics
What year were you born?
What is your gender?
- Male
- Female
- Non-binary
- Prefer not to say

In which country;were you educated as a midwife?
In which country are you professionally active?
Are you member of a midwifery association?
- Yes
- No

Was midwifery your primary degree?
- Yes
- No

If no, what, what was your primary degree or profession prior to midwifery?
- Nursing
- Other

What year did you obtain your midwifery qualification?
What are the details of your midwifery award?
- Certificate
- Diploma
- 3 year Bachelor degree
- 4 year Bachelor degree

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Postgraduate Diploma
Postgraduate Degree
Other

How many years did you work in practice as a midwife before starting your doctoral study?

Do you hold a nursing qualification?
Yes
No

What year did you obtain your nursing qualification?

What are the details of your nursing qualification?
Certificate
Diploma
3 year Bachelor degree
4 year Bachelor degree
Other

How many years did you work as a nurse before starting your midwifery study?

Do you hold a Master's qualification?
Yes
No

What year did you obtain your Master's qualification?

What are the details of your Master's qualification?
Midwifery (MSc)
Midwifery (MPhil)
Advanced practice
Research
Education
Management
Public health
Other

What is the country where your doctoral degree was obtained?

What year did you commence your doctoral study?

In what year did you obtained your doctoral degree?

What was the academic discipline of your doctoral study?
Midwifery
Nursing
Public Health
Medicine/Obstetrics
Social policy
Sociology
Education
Other

How was your doctoral study carried out:
Full time
Part time
Other

If your doctorate was part time, what was the area of your employment while you were undertaking your doctorate? (Tick all that apply)
Working in practice
Working in research
Working in education
Other

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What was the title of your doctoral degree (for example PhD, Dr. rer.nat. etc) ?
Additional comments?

Doing a doctoral study

Why did you decide to undertake a doctorate? (tick as many as apply)
- To improve health care
- To improve midwifery education
- To progress in my career
- Interest in research/academic work
- Requirement to teach in a university
- Requirement to undertake research
- Other

What were your expectations in regard to your work and career after doing a doctoral study?
Did you receive career advice before undertaking your doctoral study?
- Yes
- No

If yes, was it useful?
- Yes
- No

If yes, by whom?
Did you receive career advice during your doctoral study?
- Yes
- No

If yes, was it useful?
- Yes
- No

If yes, by whom?
What was the title or subject of your thesis?
Did you have a choice of research topic for your doctoral study?
- Yes
- No

Did you have a choice of supervisors for your doctoral study?
- Yes
- No

Did you have a midwife as a supervisor/part of a supervisory team
- Yes
- No

Did you feel supported throughout your study by your supervisor(s)?
- Yes
- No

How did your work colleagues behave towards you when they knew you were doing a doctoral study? You can use single words e.g. shocked, delighted, happy, suspicious, jealous, interested etc.
Did you feel supported by your midwifery colleagues while undertaking your doctoral study?
- Yes
- No

Do you want to provide details on how they supported you or not? You can use single words to describe
Did you have family commitments while undertaking your doctoral study?
- Yes

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No

How did undertaking your doctoral study impact your family? You can use single words to describe

Did your doctoral study impact on your personal life?

Yes

No

How did undertaking your doctoral study impact your personal life? You can use single words to describe

Have you experienced any hostile or negative treatment while doing your doctoral study?

Yes

No

If yes, can you elaborate on the hostile or negative treatment you experienced?

If you were to revisit your decision to undertake a doctoral study would you: Choose the same study programme/course?

Yes

No

If you were to revisit your decision to undertake a doctoral study would you: Choose the same college/university?

Yes

No

If you were to revisit your decision to undertake a doctoral study would you: Decide to start a doctoral study at all?

Yes

No

Would you recommend to other midwives to undertake a doctoral study?

Yes

No

Additional comments?

Experiences after obtaining a doctoral degree

What is your current job title?

What is your current employment?(tick as many as apply)

Education

Research

Administration/management

Midwifery practice

Other

Is your employment still in the domain of midwifery?

Yes

No

If no, why not?

Is your employment:

Full time

Part time

Unemployed

Permanent contract

Fixed term

Temporary contract

Other

Would you consider your current job appropriate to your qualifications?

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Yes
No

If no, why not? Why did you accept it?

To what extent do you use the knowledge and skills acquired during your doctoral degree in your current job?

Not at all
Small extent
Large extent
Very large extent

Are you satisfied with the following aspects of your current work situation? (tick as many as apply)

Content of work
Working conditions
Opportunity to use knowledge and skills acquired during studies
Job security
Income
Promotion opportunities
Benefits (medical aid, housing allowance, pension, and so on)

Additional comments?

Considering your work and life after obtaining your doctoral degree. Has your working career developed the way you have envisioned?

Yes
No

If no, why not?

Has obtaining a doctoral degree been important for your career?

Yes
No

Have you been able to pursue your post doctoral career further within the domain of midwifery?

Yes
No

If no, why not?

How much of a role did an intrinsic motivation to improve health care and midwifery play during your career development?

Great role
Minor role
Somehow
Not at all

Have your work ambitions changed since obtaining your doctoral degree ?

Yes
No
If yes, how?

Did you receive any career advice or mentoring after you obtained your doctoral degree related to future career and development?

Yes
No

If yes, was it helpful?

If yes, by whom?

Did you experience support structures for career development such as career paths, suitable positions or clarity in promotion criteria in your organisation?

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Yes
No

How well can you balance your work commitments with other different roles that you have?

Very well
Well
Often
Often not
Not at all

Could you balance your work commitments with other commitments in your life, such as family?

Yes
No
If no, why not?

Did you feel supported during the development of your working career?

Yes
No

If yes, by whom?

What role does competition play in your current working environment?

Great role
Minor role
Somehow
Not at all

Have you experienced any hostile or negative treatment since completing your doctoral degree ?

Yes
No

If yes, how did you deal with this?

Invitation to participate in a follow-up study

We realise that our questions might not have been sufficient to capture your experience, therefore we would like to invite you for taking part in a follow-up study (such as an interview) at a later stage in this study.We are keen to learn more in depth about the story of your experiences of either doing a doctoral study as a midwife in Europe, but also what your opportunities are of being a midwife with a doctoral degree in Europe, and particularly in your own country.

Would you be interested in taking part in a follow-up (interview) study?

No
Yes

If yes, please provide us your name and e-mail address:

Invitation to participate in a European Network of Doctoral Midwives

We would like to invite you to participate in building a European Network of Doctoral Midwives. This network should serve as a resource of expertise for the European Midwives Association as well as their member countries. Some of us (from this research group) have made great experiences through asking other international colleagues to work with us, for example in designing a research project, collaboratively writing an article or joining in examination commissions. However, we also made the experience that the people we called on, or people we met on international meetings, were sometimes restricted to the persons we already knew. And we realised that currently there are many more midwives with a doctoral degree in Europe, and some of them might be able to share an expertise, that until now has

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hardly been visible. In order to increase this visibility therefore, we hope you want to join in building this European Network of Doctoral Midwives.

Would you be interested to participate in a European Network of Doctoral Midwives?

No

Yes

If yes, please provide us your name and e-mail address:

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Supplementary File 3 Checklist for Reporting Of Survey Studies (CROSS)

Section/topic	Item	Item description	Reported on page #
Title and abstract			
Title and abstract	1a	State the word "survey" along with a commonly used term in title or abstract to introduce the study's design.	1
	1b	Provide an informative summary in the abstract, covering background, objectives, methods, findings/results, interpretation/discussion, and conclusions.	1
Introduction			
Background	2	Provide a background about the rationale of study, what has been previously done, and why this survey is needed.	3-5
Purpose/aim	3	Identify specific purposes, aims, goals, or objectives of the study.	5
Methods			
Study design	4	Specify the study design in the methods section with a commonly used term (e.g., cross-sectional or longitudinal).	5,6
Data collection methods	5a	Describe the questionnaire (e.g., number of sections, number of questions, number and names of instruments used).	5,6
	5b	Describe all questionnaire instruments that were used in the survey to measure particular concepts. Report target population, reported validity and reliability information, scoring/classification procedure, and reference links (if any).	5-7
	5c	Provide information on pretesting of the questionnaire, if performed (in the article or in an online supplement). Report the method of pretesting, number of times questionnaire was pre-tested, number and demographics of participants used for pretesting, and the level of similarity of demographics between pre-testing participants and sample population.	5-6
	5d	Questionnaire if possible, should be fully provided (in the article, or as appendices or as an online supplement).	Supplementary files 1 and 2
Sample characteristics	6a	Describe the study population (i.e., background, locations, eligibility criteria for participant inclusion in survey, exclusion criteria).	6-7
	6b	Describe the sampling techniques used (e.g., single stage or multistage sampling, simple random sampling, stratified sampling, cluster sampling, convenience sampling). Specify the locations of sample participants whenever clustered sampling was applied.	6-7
	6c	Provide information on sample size, along with details of sample size calculation.	6-7
	6d	Describe how representative the sample is of the study population (or target population if possible), particularly for population-based surveys.	7

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Survey administration	7a	Provide information on modes of questionnaire administration, including the type and number of contacts, the location where the survey was conducted (e.g., outpatient room or by use of online tools, such as SurveyMonkey).	7
	7b	Provide information of survey's time frame, such as periods of recruitment, exposure, and follow-up days.	7
	7c	Provide information on the entry process: –>For non-web-based surveys, provide approaches to minimize human error in data entry. –>For web-based surveys, provide approaches to prevent "multiple participation" of participants. X	7
Study preparation	8	Describe any preparation process before conducting the survey (e.g., interviewers' training process, advertising the survey).	N/A
Ethical considerations	9a	Provide information on ethical approval for the survey if obtained, including informed consent, institutional review board [IRB] approval, Helsinki declaration, and good clinical practice [GCP] declaration (as appropriate).	7-8
	9b	Provide information about survey anonymity and confidentiality and describe what mechanisms were used to protect unauthorized access.	7-8
Statistical analysis	10a	Describe statistical methods and analytical approach. Report the statistical software that was used for data analysis.	7
	10b	Report any modification of variables used in the analysis, along with reference (if available).	N/A
	10c	Report details about how missing data was handled. Include rate of missing items, missing data mechanism (i.e., missing completely at random [MCAR], missing at random [MAR] or missing not at random [MNAR]) and methods used to deal with missing data (e.g., multiple imputation).	N/A
	10d	State how non-response error was addressed.	N/A
	10e	For longitudinal surveys, state how loss to follow-up was addressed.	N/A
	10f	Indicate whether any methods such as weighting of items or propensity scores have been used to adjust for non-representativeness of the sample.	N/A
	10g	Describe any sensitivity analysis conducted.	N/A
Results			
Respondent characteristics	11a	Report numbers of individuals at each stage of the study. Consider using a flow diagram, if possible.	8-11
	11b	Provide reasons for non-participation at each stage, if possible.	N/A

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	11c	Report response rate, present the definition of response rate or the formula used to calculate response rate.	N/A
	11d	Provide information to define how unique visitors are determined. Report number of unique visitors along with relevant proportions (e.g., view proportion, participation proportion, completion proportion).	N/A
Descriptive results	12	Provide characteristics of study participants, as well as information on potential confounders and assessed outcomes.	Table 1-3
Main findings	13a	Give unadjusted estimates and, if applicable, confounder-adjusted estimates along with 95% confidence intervals and p-values.	N/A
	13b	For multivariable analysis, provide information on the model building process, model fit statistics, and model assumptions (as appropriate).	N/A
	13c	Provide details about any sensitivity analysis performed. If there are considerable amount of missing data, report sensitivity analyses comparing the results of complete cases with that of the imputed dataset (if possible).	N/A
Discussion			
Limitations	14	Discuss the limitations of the study, considering sources of potential biases and imprecisions, such as non-representativeness of sample, study design, important uncontrolled confounders.	20
Interpretations	15	Give a cautious overall interpretation of results, based on potential biases and imprecisions and suggest areas for future research.	17-20
Generalizability	16	Discuss the external validity of the results.	17
Other sections			
Role of funding source	17	State whether any funding organization has had any roles in the survey's design, implementation, and analysis.	Title page
Conflict of interest	18	Declare any potential conflict of interest.	Title page
Acknowledgements	19	Provide names of organizations/persons that are acknowledged along with their contribution to the research.	Title page

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