

# Challenges and Benefits of Maternity and Midwifery Postgraduate Education among Nurses and Midwives in the Kingdom of Saudi Arabia

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**Abstract:** This Article provides a comprehensive review of literature relevant to the research, focusing on maternity and midwifery postgraduate education, challenges, and benefits. The research strategy involved exploring databases from 2018 to 2023, revealing insights into the perspectives of various stakeholders. The study concentrates on the Kingdom of Saudi Arabia (KSA), exploring the evolution of nursing and midwifery, the current landscape of professionals, and the growing emphasis on postgraduate education. The nursing and midwifery workforce in KSA is evolving, with substantial statistics indicating a significant proportion of Saudi citizens in the field. The chapter details the current categories and registration processes for nurses and midwives, aligning with government regulations. Postgraduate education programs in KSA, exemplified by specific institutions, are discussed, emphasizing the diverse specialties and the nation's commitment to enhancing healthcare.

Challenges in maternity and midwifery postgraduate education are explored, contextualized within the global concern of maternal mortality. The critical role of education in addressing these challenges is underscored, presenting a framework for action. The chapter concludes with an examination of maternity and midwifery education programs globally, emphasizing continuity of care and specialized training. The benefits of pursuing postgraduate education in maternity and midwifery are delineated through five common themes, showcasing improved professional attributes among nurses and midwives. The chapter culminates in a summary, encapsulating the key findings and laying the foundation for subsequent chapters in the research.

**Keywords:** Maternity and Midwifery, Nurses and Midwives in the Kingdom of Saudi Arabia.

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## 1. INTRODUCTION

Continued nursing education has been shown to benefit the development of nurses and midwives, although little research has been conducted regarding patient benefits. It is increasingly common for nurses and midwives to pursue education up to the master's level. In this chapter, the researcher introduces the research strategy, focusing on maternity and midwifery in the Kingdom of Saudi Arabia (KSA). Additionally, the challenges and benefits of maternity and midwifery among nurses and midwives in the KSA are explained. This study aims to explore maternity and midwifery education programs in the KSA.

## 2. RESEARCH STRATEGY

In this review, the researcher explored websites such as Google Scholar, PubMed, the Saudi digital library through EBSCO, and Academic Search Ultimate from 2018 to 2023, focusing on the challenges and benefits of maternity and midwifery

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postgraduate education among nurses and midwives. The keywords used included maternity, midwifery, challenges, benefits, and postgraduate. This review aims to provide insight and understanding by combining findings from studies reporting on the perspectives of student nurses and midwives, clinical instructors, clinical nurses, and midwives regarding the challenges faced in the clinical learning environment (CLE). A total of 25 studies indicate that the continuity of midwifery care is the best maternity care model for women at any risk level, emphasizing a global imperative to improve access to midwifery-led care. However, diverse perspectives on the preparation of graduates for working in midwifery continuity of care models persist. This review describes the challenges and benefits of maternity and midwifery postgraduate education for nurses and midwives.

### 3. NURSES AND MIDWIVES IN THE KSA

Since 1948, nursing and midwifery in the KSA have undergone significant changes, marked by the introduction of a nursing parchment program for males. The profession is currently in a stage of development. The most recent statistics from the Ministry of Health (MOH) in KSA indicate that nurses and midwives represent 41% (83,596) of the MOH pool. Specifically, Saudi citizens make up 63% of the entire MOH nursing and midwifery pool. Based on the current student capacity of nursing and midwifery societies, the projected number of graduates during 2019-2027 is approximately 26,200. To reach the recommended rate of one nurse and midwife for every 200 Saudi citizens, KSA must retain 185,722 native nurses (Alqahtani et al., 2022).

There are currently 39 nursing and midwifery programs available in KSA. Many of these programs are managed by the nursing departments of allied health colleges. The latest trend is to separate these programs from their parent organizations and establish them as independent colleges. According to Article 17 of the Nurses Classification Regulations published by the Saudi Commission for Health Specialties (SCFHS), nurses and midwives in the KSA are now divided into three categories. The classification and registration for nurse and midwife technicians have been abolished due to government regulations closing nurse technician schools (Alharbi and Abdualrahman, 2019).

A nurse specialist falls under the first category and must possess a bachelor's degree in nursing or an equivalent from an institution of higher education in the nation of issuance. A senior nurse specialist falls under the second category and must have at least two years of clinical experience in addition to a master's degree in nursing or midwifery. Nurses and midwives with bachelor's degrees in nursing and midwifery are currently registered to work in KSA. The third category is a nurse consultant who holds a Ph.D. in nursing and midwifery and a minimum of three years of clinical experience after obtaining the Ph.D. Currently, 620 senior specialists (49% Saudi citizens), 46 nurse consultants (40% Saudi citizens), and 13,862 Saudi registered nurses with bachelor's degrees in nursing and midwifery are registered to work in KSA, according to data on nursing and midwifery registration (Alluhidan et al., 2020).

### 4. NURSES AND MIDWIVES POSTGRADUATE EDUCATION IN THE KSA

There has been an interest in training professional national nurses in response to KSA's desire to enhance its healthcare system to meet the demands of its citizens. The interest in training highly skilled cadres to work in midwifery arose from the need for precise specializations and global trends in developing specialized national cadres. This is coupled with the growing demand for qualified Saudi midwives who practice within scientific, social, ethical, and religious frameworks, aligning with the traditions of the Kingdom. The Postgraduate Diploma in Midwifery program at Imam Abdulrahman Bin Faisal University is considered one of the distinguished programs that produce nationally qualified human cadres capable of immediate employment upon receiving the diploma. This program aims to provide midwives who can assist women at all stages of life, especially before, during, and after childbirth, with special attention to newborns (Subbarayalu et al., 2019).

The nursing master's program at Batterjee Medical College is designed to prepare students for advanced nursing practice and leadership roles. The two-year curriculum requires the completion of 36 credits, and admission to the English-language program necessitates a bachelor's degree in nursing, a minimum GPA of 3.0, and a valid TOEFL score. The Master of Science in Nurse Midwifery (MSNM) program at King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS) College of Nursing in Jeddah (CON-J) aims to educate clinically, academically, and culturally competent nurse midwives. The program, lasting two years, is intended for students with a Bachelor of Science in Nursing degree from an accredited university (King Saud Bin Abdulaziz University, 2023).

Female College for Medical Sciences (FCMS) launched a Master of Science in Women's Health Nursing degree in 2021, approved by the Saudi Commission for Health Specialties (SCFHS). This program is designed for licensed nurses seeking specialization in women's health nursing, aiming to develop future leaders in the field through evidence-based care, research, scholarly endeavors, and publications. The two-year curriculum adheres to international standards, offering flexibility in time, place, and learning style (Guerrero et al., 2021). As of 2019, the SCFHS registry indicates 956 postgraduate nursing and midwifery students in KSA, with 365 enrolled at national universities and the remainder receiving scholarships from other countries.

King Saud University initiated the first master's degree in nursing and midwifery in KSA in 1987, initially admitting only female students. In 2013, the university extended enrollment to male nurses. Currently, government-led universities provide numerous master's degrees in nursing and midwifery (Aljohani, 2020). These programs are exclusively offered as full-time courses lasting two years. The first semester typically includes general education courses covering nursing theories, advanced learning and education techniques, nursing research, and biostatistics. According to the Unified Law Organizing Graduate Studies in Saudi Universities, the ratio of theoretical to clinical components in nursing and midwifery courses varies across specializations, with a total of 42 credit hours. Universities offer major specializations such as maternal-child nursing, community health, psychiatric and mental health, nursing and midwifery administration, and teaching.

King Saud University introduced its sole Ph.D. program in nursing and midwifery in the 2019–2020 academic year. Additionally, Saudi Aramco and Johns Hopkins University collaborated to launch a Doctorate in Nursing Practice (DNP) (Oraibi et al., 2022). The nursing faculty at King Abdulaziz University designed a curriculum leading to a Master's in Nursing Sciences, aiming to produce high-quality nurses with research- and clinical-based competence and knowledge. One of the degree programs focuses on obstetrics and gynecological nursing (Glasgow et al., 2018). Midwifery nursing is one of several programs offered by the Department of Nursing Practices at Umm al-Qura University. The six-semester course aims to prepare classified staff with advanced nursing and midwifery knowledge and abilities for pregnant women and babies, providing the finest medical care and producing professional nursing staff (Aljohani, 2020).

The KSA Vision 2030 outlines crucial reform goals for the Saudi Arabian healthcare system, including maternity and midwifery. The Ministry of Health (MOH) is reevaluating workforce, facilities, and equipment planning in light of Vision 2030. The MOH launched a new care model emphasizing preventive care over curative care, with a goal of making midwifery-led continuity of care the norm for maternity and midwifery. Low-risk births may occur at home or a birthing facility based on the mother's decision, with primary care nurses and midwives providing antenatal care to low-risk women (Sabbahi et al., 2020).

## **5. CHALLENGES FACING MATERNITY AND MIDWIFERY POSTGRADUATE EDUCATION**

To bring the quality of treatment to international standards and reduce maternal and neonatal mortality and morbidity, it is imperative to strengthen maternity and midwifery postgraduate education. A blueprint for creating high-quality, enduring pre- and in-service education for midwives that can save lives is the "Framework for Action to Strengthen Midwifery Education." This seven-step action plan, designed by WHO, UNFPA, UNICEF, and ICM, can be adopted by all parties involved in maternal and newborn health (World Health Organization, 2019).

However, there are persistently high maternal death rates globally. In 2020, approximately 287,000 pregnant and postpartum women died, with about 95% of these deaths occurring in low- and lower-middle-income nations. A significant portion of these deaths, about 87% (253,000), happened in Sub-Saharan Africa and Southern Asia. Sub-Saharan Africa alone accounted for over 70% (202,000) of maternal fatalities, while Southern Asia made up approximately 16% (47,000) (Atukunda et al., 2020).

The global maternal mortality ratio (MMR) remains unacceptably high at 216 per 100,000 live births, resulting in 830 women worldwide dying daily from pregnancy-related complications. In low-income nations, one in 16 women succumbs to pregnancy-related issues, a striking contrast to the ratio of one in 2,800 in wealthier nations (van der Woude, 2018). Proven life-saving interventions, including emergency caesarean sections, low-dose, high-frequency training in basic emergency obstetrics and newborn care (EMONC), kangaroo mother/father care, chlorhexidine 7.1% cord care, antibiotic therapy, and interventions for postpartum bleeding, preeclampsia, and eclampsia, exist but face challenges in implementation (Kumakech et al., 2020).

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The critical barriers to scaling up and implementing these life-saving interventions in many low-income settings include a shortage of skilled birth attendants, lack of necessary supplies and equipment, inadequate hands-on in-service training, mentorship, coaching, and supervision of health workers, inappropriate theoretical training methods, insufficient simulation and practical sessions, and ineffective community health engagement. The shortage of nurses and midwives is a major concern, leading to unattended deliveries by trained birth attendants in a substantial percentage of cases (Morris et al., 2020; Davis-Floyd et al., 2020).

Despite the positive impact of a good Clinical Learning Environment (CLE) on students' professional development, numerous challenging elements can affect learning in CLEs. Inappropriate clinical evaluation, unsuitable clinical postgraduate education programming, organizational flaws, an unsupportive learning environment, insufficient clinical supervision, and challenges in translating theoretical knowledge into clinical practice are among the obstacles hindering clinical learning (Zhang et al., 2022).

### 6. MATERNITY AND MIDWIFERY EDUCATION PROGRAMS

The ongoing evolution of postgraduate educational requirements reflects the changing environments in which nurses and midwives' practice. The concept of continuity of care originated as a response to women's dissatisfaction with the increasing fragmentation and medicalization of maternity and midwifery services in historically affluent countries (Sidebotham et al., 2019).

Maternity and midwifery postgraduate education is a key component of the International Confederation of Midwives (ICM) strategy to promote maternity and midwifery globally, aiming to increase the number and capacity of nurses and midwives to work to their full scope of practice. With compelling evidence supporting the benefits of nursing and midwifery continuity of care and no evidence of adverse events, postgraduate education now includes the 'Continuity of Care experience' (CoCE), a practicum within preregistration midwifery curricula (Homer et al., 2019).

The specialized nature of healthcare, advanced medical technologies, an expanded scope of practice recognizing that nurses and midwives can provide services previously limited to medical practitioners, increased demand for nursing and midwifery services, and other factors have contributed to the need for specialized training in the nursing and midwifery workforce (Buchan et al., 2019).

The Saudi Commission for Health Specialties (SCFHS) has taken the lead in offering professional training and preparation programs for nurses and midwives, aligning with the national strategy Vision 2030. In the 2017–2018 academic year, 38 postgraduate nursing programs, including adult critical care, oncology, cardiology, emergency, neonatal intensive care, and nursing and midwifery, were implemented. Additional programs in home care, community nursing and midwifery, and others were introduced in 2019 (Consorti et al., 2021). These two-year programs focus on clinical training and evaluation, with trainees required to pass exams and assessments to progress and graduate. The SCFHS ensures the content is developed by a recognized scientific committee, and a multi-stage process is in place for student selection. Accredited healthcare organizations serve as training facilities for various programs (Housawi et al., 2020).

The SCFHS's e-learning platform provides generic training modules in areas such as patient safety and infection control. To renew licensure, nurses and midwives are required to complete 15, 45, or 75 hours of nursing continuing education (NCE) programs for one-, three-, and five-year licenses, respectively. Continuing education activities include conferences, seminars, workshops, training sessions, research contributions, and accredited online health-related activities (Al-Dossary, 2018).

In Australia, student midwives undertake at least 20 continuity-of-care experiences, integral to their education. The Australian Nursing and Midwifery Council (ANMC) defined continuity experience as an ongoing midwifery relationship between the student and the woman from early pregnancy through the postpartum period, spanning community and hospital settings (McKellar et al., 2022).

Maternity and midwifery postgraduate education in New Zealand has historical roots in professional training and registration introduced in 1904. The program, emphasizing autonomy and partnership, prepares students for independent practice across the spectrum of maternity and midwifery. Real-world work experiences constitute at least half of the program, allowing students to learn alongside practicing nurses, midwives, and other women. The collaboration between

maternity and midwifery educators and working professionals ensures alignment with New Zealand's unique environment (Crowther et al., 2022).

In Uganda, Lira University launched the first Bachelor of Science in Midwifery (BScM) program in 2013 with the eventual goal of establishing a Master of Science in Midwifery (MScM) program. Despite the efforts, maternal and neonatal health outcomes in Uganda remain subpar, mainly due to a lack of qualified nurses and midwives (Kumakech et al., 2020).

Certified Nurse-Midwives (CNMs) have a long history of providing care throughout labor and childbirth. However, their responsibilities extend beyond these stages to include care before and after pregnancy, as well as throughout a woman's reproductive life. Students aspiring to become nurse-midwives enroll in nursing and midwifery schools. The online Doctor of Nursing Practice Nurse-Midwifery (DNP Nurse-Midwifery) course prepares students to use the maternity and midwifery model of care comprehensively (Flanagan et al., 2021).

## 7. THE BENEFITS OF MATERNITY AND MIDWIFERY POSTGRADUATE EDUCATION

Master's level nursing and midwifery postgraduate education offer several benefits, encompassing five common themes identified in the research:

### **Improved Communication:**

Nurses and midwives undergoing postgraduate education at the master's level experience improved communication skills. This enhancement contributes to effective interactions with patients, colleagues, and other healthcare professionals, fostering better patient care.

### **Personal and Professional Growth:**

Postgraduate education fosters personal and professional growth among nurses and midwives. This growth extends beyond clinical skills to include a broader understanding of healthcare management, leadership, and the integration of research into clinical practice.

### **Knowledge and Application of Theory to Practice:**

The postgraduate education process enhances the knowledge base of nurses and midwives, enabling them to apply theoretical concepts effectively in clinical practice. This integration of theory into daily care contributes to evidence-based and high-quality patient outcomes.

### **Increased Self-Assurance and Self-Esteem:**

Master's level education instills self-assurance and self-esteem in nurses and midwives. As they gain advanced knowledge and skills, healthcare professionals become more confident in their abilities, which positively impacts their approach to patient care.

### **Analytical Thinking and Decision-Making:**

Postgraduate education enhances analytical thinking and decision-making skills. Nurses and midwives with advanced education are better equipped to critically analyze complex situations, make informed decisions, and navigate challenges in clinical practice.

The pursuit of a Master of Science in Nursing (MSN) is recognized as a significant aspect of being in clinical practice. MSN graduates demonstrate higher clinical function, leadership capabilities, and advanced decision-making skills. Postgraduate education is encouraged among nurses and midwives not only to elevate their understanding of education, management, and science but also to equip them with the knowledge necessary for engaging in research and applying research-based insights in clinical settings (Kjellaas et al., 2020).

While the benefits of postgraduate education for nurses and midwives are well-established, there is a growing concern about a diminishing acknowledgment of its value. Substantial evidence suggests that nurses pursuing further academic education are more likely to possess advanced knowledge and skills. However, there is a need to address the decreasing recognition of the importance of postgraduate education, as it may limit opportunities for nurses to actively participate in nursing research within clinical practice (Mansour et al., 2020).



## 8. SUMMARY

In this chapter, a thorough exploration of pertinent previous studies has been presented, setting the stage for our research. The strategy employed in the study has been elucidated, outlining the focus on maternity and midwifery postgraduate education. The challenges encountered by nurses and midwives in pursuing postgraduate education in this field have been discussed, providing insight into the barriers faced by professionals. A detailed review of the education programs available for nurses and midwives has been provided, shedding light on the various pathways for skill enhancement and specialization.

Moreover, the chapter delves into the specific context of maternity and midwifery education in the Kingdom of Saudi Arabia (KSA), offering a comprehensive understanding of the landscape. The challenges and benefits associated with maternity and midwifery education among nurses and midwives in KSA have been outlined, providing a nuanced perspective on the factors influencing professional development in this domain.

The discussion extends to the maternity workforce in KSA, offering statistical insights and projections. The current state of nursing and midwifery programs in the country is explored, including the recent trends of establishing independent colleges for these programs. The categorization and registration of nurses and midwives are detailed, highlighting the diverse roles within these professions.

In summary, this chapter serves as a foundational exploration, encompassing the existing literature, research strategy, challenges, and benefits of maternity and midwifery postgraduate education. The contextualization within the KSA maternity workforce provides a holistic view, setting the groundwork for the subsequent chapters of the research.

## REFERENCES

- [1] Al-Dossary, R. N. "The Saudi Arabian 2030 vision and the nursing profession: The way forward." *International nursing review* 65.4 (2018): 484-490.
- [2] Alharbi, Homood, and Abdualrahman Alshehry. "Perceived stress and coping strategies among ICU nurses in government tertiary hospitals in Saudi Arabia: a cross-sectional study." *Annals of Saudi medicine* 39.1 (2019): 48-55.
- [3] Aljohani, Khalid Abdullah S. "Nursing education in Saudi Arabia: History and development." *Cureus* 12.4 (2020).
- [4] Alluhidan, Mohammed, et al. "Challenges and policy opportunities in nursing in Saudi Arabia." *Human Resources for Health* 18.1 (2020): 1-10.
- [5] Alqahtani, Friyal M., et al. "A phenomenological exploration of nurse educators' roles in Saudi Arabia's Vision 2030." *Journal of Nursing Management* 30.7 (2022): 3102-3112.
- [6] Atukunda, Esther C., et al. "When women deliver at home without a skilled birth attendant: a qualitative study on the role of health care systems in the increasing home births among rural women in Southwestern Uganda." *International Journal of Women's Health* (2020): 423-434.
- [7] Buchan, James, et al. "A critical moment: NHS staffing trends, retention and attrition." *London: Health Foundation* (2019).
- [8] Consorti, Fabrizio, et al. "Medical education in Italy: Challenges and opportunities." *Medical Teacher* 43.11 (2021): 1242-1248.
- [9] Crowther, Susan, et al. "New Zealand maternity and midwifery services and the COVID-19 response: A systematic scoping review." *Women and Birth* 35.3 (2022): 213-222.
- [10] Davis-Floyd, Robbie, Kim Gutschow, and David A. Schwartz. "Pregnancy, birth and the COVID-19 pandemic in the United States." *Medical anthropology* 39.5 (2020): 413-427.
- [11] Flanagan, Jane, et al. "Nursing knowledge in the Doctor of Nursing Practice curriculum." *Nursing Science Quarterly* 34.3 (2021): 268-274.
- [12] Glasgow, Mary Ellen Smith, et al. "The nurse-engineer: A new role to improve nurse technology interface and patient care device innovations." *Journal of Nursing Scholarship* 50.6 (2018): 601-611.

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 Vol. 10, Issue 3, pp: (361-367), Month: September - December 2023, Available at: [www.noveltyjournals.com](http://www.noveltyjournals.com)

- [13] Guerrero, Jefferson Garcia, et al. "Repeated exposure to high-fidelity simulation and nursing interns' clinical performance: impact on practice readiness." *Clinical Simulation in Nursing* 60 (2021): 18-24.
- [14] Homer C. *et al.* Midwifery Continuity of Care (2019)
- [15] Housawi, Abdulrahman, et al. "Evaluation of key performance indicators (KPIs) for sustainable postgraduate medical training: an opportunity for implementing an innovative approach to advance the quality of training programs at the Saudi Commission for Health Specialties (SCFHS)." *Sustainability* 12.19 (2020): 8030.
- [16] King Saud Bin Abdulaziz University for Health Sciences. College of Nursing. 2023.
- [17] Kjellaas, Siri, Gunilla Fredheim, and Øyfrid Larsen Moen. "Registered nurses' experiences with master's degree competence in the specialist health service: A qualitative descriptive study." *Nordic Journal of Nursing Research* 40.4 (2020): 221-228.
- [18] Kumakech, Edward, et al. "Graduate midwifery education in Uganda aiming to improve maternal and newborn health outcomes." *Annals of Global Health* 86.1 (2020).
- [19] Mansour, Mansour, et al. "Reconciling assertive communication skills with undergraduate nursing education: Qualitative perspectives from British and Saudi newly-graduated nurses." *Health Professions Education* 6.2 (2020): 176-186.
- [20] McKellar, Lois, et al. "Examining the transformation of midwifery education in Australia to inform future directions: An integrative review." *Women and Birth* (2022).
- [21] Morris, Sarah M., et al. "Implementation of the helping babies breathe training program: a systematic review." *Pediatrics* 146.3 (2020).
- [22] Oraibi, Liala Ali, et al. "Nursing Professional Trends and Role of Technical and Permanent Education in the Context of New Saudi Medical Era Rooted in Arab Regions, A bibliographic Research." *Journal of Positive Psychology and Wellbeing* 6.2 (2022): 2043-2057.
- [23] Sabbahi, Dania A., Hesham M. El-Naggar, and Mohammed H. Zahran. "Management of dental waste in dental offices and clinics in Jeddah, Saudi Arabia." *Journal of the air & waste Management Association* 70.10 (2020): 1022-1029.
- [24] Sidebotham M. *et al.* Midwifery students' experiences of working within a midwifery caseload model Midwifery (2019)
- [25] Sidebotham, Mary, et al. "Identifying the priorities for midwifery education across Australia and New Zealand: A Delphi study." *Women and Birth* 34.2 (2021): 136-144.
- [26] Subbarayalu, Arun Vijay, and Ahmed Al Kuwaiti. "Quality of work life (QoWL) of faculty members in Saudi higher education institutions: A comparison between undergraduate medical and engineering program." *International Journal of Educational Management* 33.4 (2019): 768-779.
- [27] van der Woude, Janneke. "Saturday October 6, 2018.
- [28] World Health Organization. "Strengthening quality midwifery education for universal health coverage 2030." (2019).
- [29] Zhang, Juxia, et al. "The clinical learning environment, supervision and future intention to work as a nurse in nursing students: a cross-sectional and descriptive study." *BMC Medical Education* 22.1 (2022): 1-9.