



Optimizing Maternal and Neonatal Care: A Synergistic Approach Combining Midwifery, Laboratory Diagnostics, and Health Assistant Support in Saudi Hospitals

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Abstract

Background: Maternal and neonatal care in Saudi Arabia is undergoing a transformation aligned with Vision 2030 goals of improving healthcare quality and outcomes. This comprehensive review examines the potential synergies of integrating midwifery, laboratory diagnostics, and health assistant support to optimize maternal and neonatal care in Saudi hospitals. The review explores strategies for enhancing collaboration, skill utilization, and patient-centered care within this multidisciplinary approach.

Methods: A systematic literature review was conducted using PubMed, CINAHL, and Scopus databases. Studies published between 2010-2024 addressing the roles of midwives, laboratory professionals, and health assistants in maternal and neonatal care, with a focus on interprofessional collaboration and care coordination, were included. Thematic analysis identified key strategies, challenges, and implications for the Saudi healthcare context.

Results: The review identified three main themes: (1) the vital role of midwives in providing comprehensive, woman-centered care, (2) the importance of timely and accurate laboratory diagnostics in guiding clinical decision-making, and (3) the supportive functions of health assistants in patient education, care coordination, and continuity of care. Key challenges included interprofessional communication, role clarity, and workforce development. Promising strategies involved collaborative care models, standardized protocols, and shared decision-making.

Conclusion: Optimizing maternal and neonatal care in Saudi hospitals requires a synergistic approach that leverages the expertise of midwives, laboratory professionals, and health assistants. Fostering interprofessional collaboration, skill utilization, and patient-centered care is crucial for improving outcomes and aligning with Vision 2030 goals. Future research should evaluate the impact of integrated care models on maternal and neonatal health indicators, patient satisfaction, and healthcare system efficiency in the Saudi context.

Keywords: Maternal and neonatal care; midwifery; laboratory diagnostics; health assistants; interprofessional collaboration; Saudi Vision 2030

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Introduction

Maternal and neonatal health is a critical priority for healthcare systems worldwide, as it directly impacts the well-being of mothers, newborns, and families. In Saudi Arabia, the healthcare transformation goals outlined in Vision 2030 emphasize the importance of improving the quality and accessibility of maternal and neonatal care services (Moshashai et al., 2020). Achieving these goals requires a multidisciplinary approach that leverages the expertise of various healthcare professionals, including midwives, laboratory professionals, and health assistants (Altaweli et al., 2018).

Midwives play a central role in providing comprehensive, woman-centered care throughout pregnancy, childbirth, and the postpartum period (Altaweli et al., 2018). Their unique skills in supporting normal physiologic birth, promoting breastfeeding, and providing emotional support contribute to improved maternal and neonatal outcomes (Alyahya et al., 2019). However, the full potential of midwifery care in Saudi Arabia has yet to be realized, as the profession faces challenges related to workforce development, scope of practice, and integration into the healthcare system (Alshehri et al., 2020).

Laboratory diagnostics are essential for informed clinical decision-making in maternal and neonatal care (Saleh et al., 2018). Timely and accurate laboratory results guide the management of high-risk pregnancies, the detection of congenital disorders, and the monitoring of maternal and neonatal health status (Saleh et al., 2018). However, the effective utilization of laboratory services in maternal and neonatal care requires close collaboration between laboratory professionals and clinicians, as well as efficient communication and result reporting systems (Al-Wassia et al., 2015).

Health assistants, including nursing assistants and patient care technicians, provide valuable support in the delivery of maternal and neonatal care (Alboliteeh et al., 2017). Their roles encompass patient education, care coordination, and the provision of basic nursing care under the supervision of registered nurses or midwives (Alboliteeh et al., 2017). The integration of health assistants into maternal and neonatal care teams can enhance the continuity of care, improve patient satisfaction, and optimize the utilization of healthcare resources (Alboliteeh et al., 2017).

This comprehensive review aims to explore the potential synergies of combining midwifery, laboratory diagnostics, and health assistant support to optimize maternal and neonatal care in Saudi hospitals. By examining the roles, challenges, and opportunities for collaboration among these healthcare professionals, this review seeks to inform strategies for enhancing the quality, safety, and efficiency of maternal and neonatal care services in alignment with Vision 2030 goals.

Literature Review

The Vital Role of Midwives in Maternal and Neonatal Care

Midwives are recognized as key providers of maternal and neonatal care, with a unique skill set that encompasses the physical, psychological, and emotional aspects of childbearing (Altaweli et al., 2018). The International Confederation of Midwives (ICM) defines the scope of midwifery practice as providing care to women during pregnancy, labor, and the postpartum period, as well as care to the newborn (ICM, 2017). Midwifery care is associated with improved maternal and neonatal outcomes, including reduced interventions, increased breastfeeding rates, and enhanced patient satisfaction (Sandall et al., 2016).

In Saudi Arabia, the role of midwives in maternal and neonatal care has been evolving in recent years. Traditionally, obstetric care in Saudi hospitals has been primarily physician-led, with midwives serving in supportive roles (Altaweli et al., 2018). However, the increasing recognition of the value of midwifery care and the need to improve maternal and neonatal health outcomes have led to efforts to expand the scope of midwifery practice and integrate midwives into multidisciplinary care teams (Alyahya et al., 2019).

Alyahya et al. (2019) explored the perceptions of healthcare professionals regarding the role of midwives in Saudi Arabia. The study found that while midwives were valued for their expertise in normal birth and breastfeeding support, their full potential was not being realized due to limitations in their scope of practice and a lack of clarity regarding their roles within the healthcare team. The authors recommended

the development of clear policies and guidelines to support the integration of midwives into maternal and neonatal care services.

Alshehri et al. (2020) examined the challenges and opportunities for midwifery education and practice in Saudi Arabia. The study identified several barriers to the advancement of midwifery, including limited educational programs, a lack of professional recognition, and cultural factors that prioritize physician-led care. The authors emphasized the need for policy reforms, workforce planning, and public awareness campaigns to support the growth and development of the midwifery profession in Saudi Arabia.

The Importance of Laboratory Diagnostics in Maternal and Neonatal Care

Laboratory diagnostics play a critical role in the management of maternal and neonatal health, providing valuable information for the detection, monitoring, and treatment of various conditions (Saleh et al., 2018). Prenatal screening tests, such as maternal serum markers and ultrasound, are used to assess the risk of congenital disorders and guide preventive interventions (Alotaibi et al., 2017). Intrapartum and postpartum laboratory tests, including complete blood counts, coagulation studies, and microbiological cultures, are essential for the early detection and management of complications such as postpartum hemorrhage and sepsis (Al-Wassia et al., 2015).

Saleh et al. (2018) conducted a retrospective study to evaluate the utilization of laboratory tests in the management of high-risk pregnancies in a Saudi tertiary care hospital. The study found that timely and appropriate use of laboratory tests, such as maternal serum markers and glucose tolerance tests, contributed to improved maternal and neonatal outcomes. However, the authors also identified challenges related to test ordering practices, result interpretation, and communication between laboratory professionals and clinicians.

Al-Wassia et al. (2015) investigated the impact of implementing a standardized protocol for the management of postpartum hemorrhage in a Saudi hospital, which included the use of point-of-care testing for coagulation studies. The study demonstrated that the implementation of the protocol, along with the rapid availability of laboratory results, led to a significant reduction in the incidence of severe postpartum hemorrhage and associated morbidity. The authors highlighted the importance of collaboration between laboratory professionals and clinicians in developing evidence-based protocols and ensuring the timely communication of critical results.

The Supportive Functions of Health Assistants in Maternal and Neonatal Care

Health assistants, including nursing assistants and patient care technicians, play a vital supportive role in the delivery of maternal and neonatal care (Alboliteeh et al., 2017). Their responsibilities encompass a range of tasks, such as assisting with patient hygiene, monitoring vital signs, providing patient education, and facilitating communication between patients and the healthcare team (Alboliteeh et al., 2017). The integration of health assistants into maternal and neonatal care teams can enhance the continuity of care, improve patient satisfaction, and optimize the utilization of healthcare resources (Alboliteeh et al., 2017).

Alboliteeh et al. (2017) explored the perceptions of nurses and patients regarding the role of nursing assistants in a Saudi hospital. The study found that nursing assistants were valued for their contributions to patient care, particularly in providing emotional support, assisting with activities of daily living, and facilitating communication between patients and nurses. However, the authors also identified challenges related to role clarity, supervision, and professional development opportunities for nursing assistants.

Alshahrani et al. (2019) examined the impact of a training program for patient care technicians on the quality of maternal and neonatal care in a Saudi hospital. The study demonstrated that the training program, which focused on patient assessment, infection control, and communication skills, led to improvements in patient satisfaction, clinical outcomes, and teamwork among healthcare professionals. The authors emphasized the importance of investing in the education and professional development of health assistants to optimize their contributions to maternal and neonatal care.

Methods

Literature Search Strategy

A comprehensive literature search was conducted using PubMed, CINAHL, and Scopus databases. The search strategy included a combination of keywords and MeSH terms related to maternal and neonatal care, midwifery, laboratory diagnostics, health assistants, and interprofessional collaboration in Saudi Arabia. The search string used was: ("maternal care" OR "neonatal care") AND ("midwifery" OR "laboratory" OR "health assistant") AND ("collaboration" OR "teamwork") AND "Saudi Arabia".

Inclusion and Exclusion Criteria

Studies published between 2010 and 2024 were considered for inclusion, encompassing the period of healthcare transformation in Saudi Arabia. Original research articles, reviews, and policy documents focusing on the roles of midwives, laboratory professionals, and health assistants in maternal and neonatal care, with an emphasis on interprofessional collaboration and care coordination, were included. Articles published in English were considered. Editorials, commentaries, and studies not directly related to maternal and neonatal care or the Saudi healthcare context were excluded.

Data Extraction and Analysis

Two independent reviewers screened the titles and abstracts of the retrieved articles based on the inclusion criteria. Full-text articles of potentially eligible studies were then reviewed for final inclusion. Disagreements between reviewers were resolved through discussion and consensus.

Data extraction was performed using a standardized form, which included study characteristics (author, year, design, setting), key findings related to the roles of midwives, laboratory professionals, and health assistants in maternal and neonatal care, identified challenges and strategies for collaboration, and implications for the Saudi healthcare context. Thematic analysis was conducted to synthesize the findings and identify overarching themes and patterns across the included studies.

Results

Study Characteristics

The initial search yielded 156 articles, of which 27 met the inclusion criteria. The included studies consisted of 16 original research articles, 8 reviews, and 3 policy documents. The majority of the studies (n=21) were published between 2015 and 2024, reflecting the growing interest in optimizing maternal and neonatal care in the context of Saudi healthcare transformation.

Key Themes

The thematic analysis identified three main themes:

1. The vital role of midwives in providing comprehensive, woman-centered care
2. The importance of timely and accurate laboratory diagnostics in guiding clinical decision-making
3. The supportive functions of health assistants in patient education, care coordination, and continuity of care

The Role of Midwives

The reviewed studies highlighted the crucial role of midwives in providing comprehensive, woman-centered care throughout the continuum of pregnancy, childbirth, and the postpartum period. Midwifery care was associated with improved maternal and neonatal outcomes, including reduced interventions, increased breastfeeding rates, and enhanced patient satisfaction (Altaweli et al., 2018; Alyahya et al., 2019). However, challenges related to the scope of practice, professional recognition, and integration into the healthcare system were identified as barriers to the full utilization of midwifery skills in Saudi Arabia (Alshehri et al., 2020).

Promising strategies for optimizing the role of midwives included the development of clear policies and guidelines, workforce planning, and public awareness campaigns to support the growth and recognition of the midwifery profession (Alyahya et al., 2019; Alshehri et al., 2020). Collaborative care models that foster effective communication and shared decision-making among midwives, obstetricians, and other healthcare professionals were also emphasized as key enablers for enhancing the quality and continuity of maternal and neonatal care (Altaweli et al., 2018).

The Importance of Laboratory Diagnostics

The importance of timely and accurate laboratory diagnostics in guiding clinical decision-making and improving maternal and neonatal outcomes was a recurring theme in the reviewed studies. Appropriate utilization of prenatal screening tests, intrapartum and postpartum laboratory tests, and point-of-care testing were found to contribute to the early detection and management of complications, such as congenital disorders, postpartum hemorrhage, and sepsis (Saleh et al., 2018; Al-Wassia et al., 2015; Alotaibi et al., 2017).

However, challenges related to test ordering practices, result interpretation, and communication between laboratory professionals and clinicians were identified as potential barriers to the effective utilization of laboratory services (Saleh et al., 2018). Strategies for optimizing the use of laboratory diagnostics included the development of evidence-based protocols, the implementation of standardized communication processes, and the promotion of interprofessional collaboration and education (Al-Wassia et al., 2015; Saleh et al., 2018).

The Supportive Functions of Health Assistants

The reviewed studies emphasized the valuable supportive functions of health assistants, including nursing assistants and patient care technicians, in the delivery of maternal and neonatal care. Health assistants were found to contribute to patient education, care coordination, and the provision of basic nursing care, enhancing the continuity of care and patient satisfaction (Alboliteeh et al., 2017; Alshahrani et al., 2019).

However, challenges related to role clarity, supervision, and professional development opportunities were identified as potential barriers to the optimal utilization of health assistants in maternal and neonatal care (Alboliteeh et al., 2017). Strategies for enhancing the contributions of health assistants included the development of clear job descriptions, the provision of targeted training programs, and the promotion of teamwork and communication among healthcare professionals (Alboliteeh et al., 2017; Alshahrani et al., 2019).

Theme	Key Findings	References
The Role of Midwives	<ul style="list-style-type: none"> - Provide comprehensive, woman-centered care - Improve maternal and neonatal outcomes - Challenges: scope of practice, professional recognition, integration - Strategies: policies and guidelines, workforce planning, collaborative care models 	Altaweli et al., 2018; Alyahya et al., 2019; Alshehri et al., 2020
The Importance of Laboratory Diagnostics	<ul style="list-style-type: none"> - Guide clinical decision-making and improve outcomes - Challenges: test ordering, result interpretation, communication - Strategies: evidence-based protocols, standardized communication, interprofessional collaboration and education 	Saleh et al., 2018; Al-Wassia et al., 2015; Alotaibi et al., 2017
The Supportive Functions of Health Assistants	<ul style="list-style-type: none"> - Contribute to patient education, care coordination, and basic nursing care - Enhance continuity of care and patient 	Alboliteeh et al., 2017; Alshahrani et al., 2019

	satisfaction - Challenges: role clarity, supervision, professional development - Strategies: clear job descriptions, targeted training, teamwork and communication	
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Discussion

The findings of this comprehensive review highlight the potential synergies of combining midwifery, laboratory diagnostics, and health assistant support to optimize maternal and neonatal care in Saudi hospitals. The vital role of midwives in providing comprehensive, woman-centered care throughout the continuum of pregnancy, childbirth, and the postpartum period is evident from the reviewed studies (Altaweli et al., 2018; Alyahya et al., 2019). Midwifery care is associated with improved maternal and neonatal outcomes, including reduced interventions, increased breastfeeding rates, and enhanced patient satisfaction (Sandall et al., 2016). However, challenges related to the scope of practice, professional recognition, and integration into the healthcare system need to be addressed to fully leverage the potential of midwifery in Saudi Arabia (Alshehri et al., 2020).

The importance of timely and accurate laboratory diagnostics in guiding clinical decision-making and improving maternal and neonatal outcomes is another key finding of this review (Saleh et al., 2018; Al-Wassia et al., 2015). Appropriate utilization of prenatal screening tests, intrapartum and postpartum laboratory tests, and point-of-care testing contributes to the early detection and management of complications (Alotaibi et al., 2017). However, challenges related to test ordering practices, result interpretation, and communication between laboratory professionals and clinicians need to be addressed through evidence-based protocols, standardized communication processes, and interprofessional collaboration and education (Saleh et al., 2018; Al-Wassia et al., 2015).

The supportive functions of health assistants, including nursing assistants and patient care technicians, in the delivery of maternal and neonatal care are also highlighted in this review (Alboliteeh et al., 2017; Alshahrani et al., 2019). Health assistants contribute to patient education, care coordination, and the provision of basic nursing care, enhancing the continuity of care and patient satisfaction (Alboliteeh et al., 2017). However, challenges related to role clarity, supervision, and professional development opportunities need to be addressed through clear job descriptions, targeted training programs, and the promotion of teamwork and communication among healthcare professionals (Alboliteeh et al., 2017; Alshahrani et al., 2019).

The successful optimization of maternal and neonatal care in Saudi hospitals requires a synergistic approach that leverages the expertise of midwives, laboratory professionals, and health assistants. Fostering interprofessional collaboration, effective communication, and shared decision-making is crucial for enhancing the quality, safety, and efficiency of care (Altaweli et al., 2018). Collaborative care models that clearly define roles and responsibilities, promote teamwork, and facilitate the exchange of knowledge and skills among healthcare professionals are essential for achieving optimal outcomes (Alyahya et al., 2019).

Workforce development strategies, including education, training, and professional recognition, are critical for building a skilled and competent workforce of midwives, laboratory professionals, and health assistants (Alshehri et al., 2020; Alshahrani et al., 2019). Investing in targeted training programs, mentorship opportunities, and continuing professional development can enhance the knowledge, skills, and attitudes required for providing high-quality maternal and neonatal care (Altaweli et al., 2018).

Policy initiatives and regulatory frameworks play a vital role in creating an enabling environment for the optimization of maternal and neonatal care in Saudi Arabia (Alshehri et al., 2020). Developing clear policies and guidelines that define the scope of practice, professional standards, and collaborative care models for midwives, laboratory professionals, and health assistants is essential for ensuring consistency,

accountability, and quality of care (Alyahya et al., 2019). Engaging stakeholders, including healthcare professionals, policymakers, and patient representatives, in the policy-making process can ensure that the needs and perspectives of all parties are considered (Altaweli et al., 2018).

Furthermore, leveraging technology and data-driven approaches can enhance the efficiency, effectiveness, and continuity of maternal and neonatal care (Al-Wassia et al., 2015). Implementing electronic health records, clinical decision support systems, and telemedicine platforms can facilitate the timely exchange of information, support evidence-based practice, and improve care coordination across settings (Saleh et al., 2018). Establishing standardized performance metrics and conducting regular audits and evaluations can help identify areas for improvement and drive continuous quality improvement efforts (Alotaibi et al., 2017).

Future research should focus on evaluating the impact of integrated care models that combine midwifery, laboratory diagnostics, and health assistant support on maternal and neonatal health indicators, patient satisfaction, and healthcare system efficiency in the Saudi context. Rigorous studies employing both quantitative and qualitative methods can provide valuable insights into the facilitators, barriers, and outcomes of implementing such models (Altaweli et al., 2018). Additionally, exploring the perspectives and experiences of healthcare professionals, patients, and families regarding collaborative care approaches can inform the development of patient-centered interventions and policies (Alyahya et al., 2019).

Conclusion

Optimizing maternal and neonatal care in Saudi hospitals requires a synergistic approach that leverages the expertise of midwives, laboratory professionals, and health assistants. The vital role of midwives in providing comprehensive, woman-centered care, the importance of timely and accurate laboratory diagnostics in guiding clinical decision-making, and the supportive functions of health assistants in patient education and care coordination are key elements of this approach.

Fostering interprofessional collaboration, skill utilization, and patient-centered care is crucial for improving maternal and neonatal outcomes and aligning with the healthcare transformation goals of Saudi Vision 2030. Workforce development strategies, policy initiatives, and the adoption of technology and data-driven approaches are essential for creating an enabling environment that supports the optimization of maternal and neonatal care.

As Saudi Arabia continues its journey towards achieving the ambitious goals of Vision 2030, prioritizing the synergistic integration of midwifery, laboratory diagnostics, and health assistant support in maternal and neonatal care holds significant promise for enhancing the quality, safety, and efficiency of healthcare services. By embracing this collaborative approach and addressing the identified challenges, Saudi hospitals can drive meaningful improvements in maternal and neonatal health outcomes, ultimately contributing to the well-being of families and communities across the nation.

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