Improving Maternal and Child Health Services in Saudi Primary Healthcare Centers: Administrative Frameworks and Nursing Implementation

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Abstract: Saudi Arabia has made significant progress in maternal and child health (MCH) outcomes over recent decades, yet achieving optimal MCH service delivery in primary healthcare centers (PHCs) requires continued improvement in both administrative systems and nursing implementation. This comprehensive review examines current administrative frameworks and nursing practices for MCH services in Saudi PHCs, identifying challenges and opportunities for enhancement. The analysis reveals that while the Saudi health transformation strategy has established foundational structures for MCH services, implementation gaps persist in several domains: service integration, workforce development, quality monitoring, and information systems. The study identified critical administrative barriers including fragmented governance, inconsistent policy implementation, resource allocation inefficiencies, and limited performance accountability mechanisms. From the nursing perspective, challenges include workforce shortages, uneven competency development, limited decision-making autonomy, and inadequate training in MCH-specific competencies. The paper proposes a comprehensive improvement framework integrating administrative and nursing innovations structured around four key domains: governance optimization, workforce enhancement, service delivery redesign, and quality management advancement. Specific recommendations include developing integrated MCH service pathways, implementing competency-based professional development systems, establishing structured mentorship programs, enhancing interprofessional collaboration through formal coordination mechanisms, strengthening community engagement initiatives, and implementing comprehensive quality monitoring systems. By addressing these interconnected administrative and nursing dimensions simultaneously, Saudi PHCs can significantly advance MCH service quality, accessibility, and effectiveness, ultimately improving health outcomes for mothers and children throughout the Kingdom.

Keywords: administrative, comprehensive, opportunities, fragmented, interconnected.

1. Introduction

Maternal and child health (MCH) services represent a critical component of primary healthcare systems worldwide, serving as a foundation for population health and development. These services encompass a continuum of care from preconception through pregnancy, childbirth, and early childhood, providing preventive, promotive, and curative interventions that significantly impact health outcomes (WHO, 2020). In Saudi Arabia, substantial investments in healthcare infrastructure have yielded remarkable

improvements in key MCH indicators over recent decades. However, optimizing MCH service delivery at the primary healthcare level remains a priority within the broader health system transformation underway through Vision 2030 initiatives (Ministry of Health, 2021).

Primary healthcare centers (PHCs) serve as the first point of contact with the health system for most Saudi citizens, providing essential MCH services including antenatal care, immunization, growth monitoring, developmental screening, and health education. These centers operate at the interface between communities and the broader healthcare system, making them ideally positioned to deliver integrated, accessible MCH services (Al-Hanawi et al., 2018). The effectiveness of these services depends on both administrative frameworks that enable systematic implementation and frontline nursing practices that translate policies into direct patient care.

Administrative aspects of MCH services encompass governance structures, resource allocation mechanisms, policy frameworks, information systems, and quality monitoring approaches. These administrative elements create the infrastructure within which clinical services operate, significantly influencing service accessibility, continuity, and quality (Mosca et al., 2017). In the Saudi context, various administrative reforms have been implemented to strengthen PHC operations, including decentralization initiatives, cluster-based governance models, and performance monitoring systems (Almalki et al., 2021). However, the specific impact of these administrative frameworks on MCH service delivery has not been comprehensively examined.

Nursing implementation represents the critical interface where administrative frameworks meet patient care. Nurses constitute the largest professional group within Saudi PHCs and perform essential roles in MCH service delivery including assessment, intervention, education, and coordination (Aldossary et al., 2020). Their practices significantly influence service quality, patient experience, and health outcomes. Understanding current nursing implementation patterns for MCH services, including challenges and enablers, is essential for developing effective improvement strategies.

The relationship between administrative frameworks and nursing implementation for MCH services is inherently bidirectional and dynamic. Administrative systems establish the structural and procedural context within which nursing practice occurs, while nursing experiences and outcomes provide essential feedback to refine administrative approaches. Optimizing MCH services requires attention to both dimensions and their interactions, yet this integrated perspective has received limited attention in previous research on Saudi primary healthcare.

This paper aims to address this gap by conducting a comprehensive examination of both administrative frameworks and nursing implementation for MCH services in Saudi PHCs. The analysis identifies current challenges in both domains and develops an integrated improvement framework that addresses administrative and nursing dimensions simultaneously. By considering these complementary perspectives, the paper seeks to provide practical recommendations for enhancing MCH service delivery within the evolving Saudi healthcare system.

2. Literature Review

2.1 Maternal and Child Health Services in Primary Healthcare

Primary healthcare centers serve as critical delivery platforms for maternal and child health services globally, with substantial evidence supporting their effectiveness in improving health outcomes. The World Health Organization (WHO) identifies essential MCH services that should be available at the primary care level, including antenatal care, postnatal follow-up, immunization, growth monitoring, developmental assessment, nutrition counseling, and anticipatory guidance (WHO, 2018). These services form a continuum of care addressing the interconnected health needs of mothers and children from preconception through early childhood.

Research demonstrates that strong PHC-based MCH services contribute to reduced maternal and infant mortality, improved child development outcomes, higher immunization rates, and enhanced health equity

(Kruk et al., 2018). Black et al. (2017) conducted a comprehensive review of MCH interventions, finding that implementation through integrated primary care platforms significantly enhanced effectiveness compared to vertical programs. The economic benefits of PHC-based MCH services are also substantial, with cost-effectiveness analyses by Stenberg et al. (2019) demonstrating high return on investment for comprehensive primary care approaches compared to hospital-centric models.

The integration of MCH services within primary healthcare systems offers several advantages including improved accessibility, continuity of care, community engagement, and coordination across the care continuum. However, implementing comprehensive MCH services at the primary care level also presents challenges related to workforce capacity, resource availability, quality assurance, and coordination with secondary and tertiary care (Lassi et al., 2018).

2.2 Saudi Primary Healthcare System: Structure and Evolution

The Saudi primary healthcare system has undergone significant development since its formal establishment in the 1980s, evolving from basic health centers to more comprehensive primary care facilities offering a range of preventive and curative services. Al-Hanawi et al. (2018) documented the historical progression of Saudi PHCs, noting major expansion phases and organizational reforms that have shaped the current system. Today, over 2,400 PHCs operate throughout the Kingdom, providing the first level of care within the Saudi health system (Ministry of Health, 2021).

Organizationally, PHCs operate within a mixed governance model that combines central policy direction from the Ministry of Health with increasingly decentralized operational management. Recent reforms have established regional health clusters that group PHCs with hospitals and specialized centers to enhance service integration and coordination (Albejaidi & Katz, 2020). This cluster model represents a significant shift from previous administrative arrangements and aims to strengthen the continuity of care across different levels of the health system.

The scope of services provided by Saudi PHCs has expanded considerably over time. Contemporary centers offer eight essential service categories: general outpatient care, maternal and child health, management of chronic conditions, dental health, preventive services, health education, environmental health, and pharmacy services (Ministry of Health, 2020). Service availability varies somewhat based on center size, classification, and location, with larger centers typically offering a more comprehensive service range.

Workforce composition in Saudi PHCs includes physicians, nurses, pharmacists, laboratory technicians, and administrative staff, with staffing levels determined by population served and center classification. Nursing personnel constitute approximately 30% of the PHC workforce, with varying qualification levels including bachelor-prepared nurses, nursing technicians, and nursing assistants (Aldossary et al., 2020). The distribution of healthcare professionals shows significant geographical variation, with rural and remote areas facing greater staffing challenges compared to urban centers (Almalki et al., 2021).

Financing for PHCs occurs primarily through national budget allocations, with services provided free of charge to Saudi citizens. Recent reforms have introduced performance-based financing elements that link resource allocation to achievement of specific quality and output targets (Ministry of Health, 2021). These financing reforms aim to enhance efficiency and quality by creating financial incentives for improved performance.

2.3 Administrative Frameworks for MCH Services

Administrative frameworks encompass the governance structures, policy mechanisms, resource allocation approaches, information systems, and accountability measures that enable systematic service delivery. For MCH services, effective administrative frameworks are particularly important given the need for service integration across the care continuum and coordination among multiple providers and programs.

Governance structures for MCH services vary considerably across health systems. Kruk et al. (2018) identified several governance models, ranging from vertically organized maternal and child health programs to fully integrated approaches embedded within broader primary care services. Evidence

suggests that while vertical programs may enhance focused attention on specific MCH priorities, integrated governance approaches generally support better continuity of care and more efficient resource utilization (Black et al., 2017).

Policy frameworks provide essential guidance for MCH service implementation. Effective policy approaches typically include explicit service standards, clear clinical protocols, well-defined referral pathways, and systematic quality expectations (WHO, 2016). The implementation of these policies requires supportive mechanisms including provider training, performance monitoring, and continuous improvement processes to translate written policies into consistent practice.

Resource allocation mechanisms significantly influence MCH service availability and quality. Evidence from comparative health system research indicates that dedicated funding streams for MCH services can protect essential interventions but may create fragmentation, while integrated financing approaches enhance coordination but may reduce visibility of MCH-specific resource needs (Stenberg et al., 2019). Beyond financial resources, allocation systems for human resources, equipment, medications, and information technology all affect MCH service capacity.

Information systems play increasingly important roles in MCH service administration, supporting clinical documentation, performance monitoring, population health management, and quality improvement. Digital health approaches specifically designed for MCH services have demonstrated effectiveness in enhancing service coordination, supporting clinical decision-making, engaging patients, and monitoring outcomes (Tamrat & Kachnowski, 2018). However, implementation challenges related to infrastructure, interoperability, and user acceptance remain common across health systems.

Accountability mechanisms establish responsibility for MCH service performance and create incentives for continuous improvement. These mechanisms operate at multiple levels, including professional accountability for individual providers, organizational accountability for healthcare facilities, and system accountability for health administrators (WHO, 2018). Research indicates that effective accountability approaches combine supportive supervision, performance feedback, quality incentives, and community engagement to drive sustained improvement (Kruk et al., 2018).

In the Saudi context, administrative frameworks for MCH services reflect the broader evolution of the healthcare system. The National Transformation Program and Vision 2030 have established high-level targets for maternal and child health outcomes, supported by specific policy initiatives including the Mother and Child Health Passport Program, the National Strategy for Children, and various clinical practice guidelines (Ministry of Health, 2020). Recent administrative reforms have also introduced performance monitoring frameworks, quality accreditation requirements, and digital health initiatives relevant to MCH services.

2.4 Nursing Practice in MCH Services

Nurses play fundamental roles in delivering MCH services across healthcare settings, with their scope and focus varying based on professional preparation, regulatory frameworks, and health system characteristics. Within primary healthcare, nursing contributions to MCH span multiple dimensions including clinical care, health education, family support, community outreach, and service coordination (Dawson et al., 2018).

Clinical nursing roles in MCH services typically include antenatal assessment, growth monitoring, developmental screening, immunization administration, basic illness management, and postpartum support. Research demonstrates that nurse-led approaches to these interventions can achieve outcomes comparable or superior to physician-led models, particularly when nurses work within structured protocols and receive appropriate training (Lassi et al., 2018).

Educational interventions represent another critical nursing function in MCH services. Nurses provide guidance on nutrition, infant feeding, developmental stimulation, illness prevention, family planning, and safety practices. The effectiveness of these educational interventions depends on nurses' communication

skills, cultural competence, and ability to tailor information to different family contexts (Harrison et al., 2017).

Care coordination functions are increasingly emphasized in nursing practice for MCH services. Dawson et al. (2018) documented how nurses connect families with needed resources, facilitate transitions between services, ensure follow-up for identified concerns, and integrate care across multiple providers. These coordination activities are particularly important for vulnerable populations with complex health and social needs.

Community engagement activities extend nursing practice beyond facility-based care into population-focused interventions. Community health nursing approaches for MCH include outreach to unregistered families, collaboration with community organizations, home visiting programs, and participation in community health assessments (WHO, 2018). These community-oriented functions help address social determinants of health and reach populations with limited access to facility-based services.

The implementation of these nursing roles depends on various enabling factors including educational preparation, scope of practice definitions, supportive supervision, availability of clinical guidelines, interprofessional collaboration models, and professional development opportunities. Challenges to effective nursing implementation of MCH services commonly include workforce shortages, limited professional autonomy, inadequate specialized training, heavy workloads, and poor coordination with other providers (Lassi et al., 2018).

In Saudi Arabia, nursing practice for MCH services reflects the profession's ongoing development within the broader healthcare system. The nursing workforce has expanded significantly, with increasing numbers of Saudi nationals entering the profession and graduate education opportunities expanding (Aldossary et al., 2020). However, challenges related to professional status, career advancement, specialized practice development, and nurse retention continue to affect MCH service delivery in many settings.

2.5 Current Challenges in Saudi MCH Services

Despite substantial progress in overall health system development, several challenges affect MCH service delivery in Saudi primary healthcare centers. These challenges span administrative, clinical, and socio-cultural dimensions, creating complex implementation barriers that require multifaceted solutions.

Administrative challenges include fragmentation of MCH services across different programs and departments, inconsistent implementation of clinical guidelines, limited performance monitoring specific to MCH outcomes, and coordination gaps between primary care and hospital services (Mosca et al., 2017). Al-Yousuf et al. (2018) documented how these administrative issues contribute to service inconsistencies, missed opportunities for intervention, and inefficient resource utilization in many PHCs.

Workforce challenges significantly impact MCH service implementation. Almalki et al. (2021) identified persistent nursing shortages in many PHCs, with highPatient-nurse ratios limiting the time available for comprehensive MCH services. These quantitative shortages are compounded by qualitative challenges including limited specialized training in maternal and child health, high staff turnover in some regions, and ongoing dependence on expatriate nurses who may face language and cultural barriers when providing family-centered care.

Quality management systems for MCH services remain underdeveloped in many PHCs. Al-Khaldi et al. (2017) evaluated quality monitoring practices across 48 PHCs, finding limited systematic assessment of MCH service quality beyond basic output measures such as vaccination coverage. The study identified gaps in clinical audit processes, patient experience measurement, outcome tracking, and continuous quality improvement mechanisms specifically focused on maternal and child health.

Information system limitations also affect MCH service delivery. While electronic health records have been implemented in many PHCs, Aldossary et al. (2020) noted that these systems often lack specialized functionality for MCH care coordination, growth tracking, developmental monitoring, and family-centered

documentation. Paper-based records continue to be used for some MCH functions, creating documentation fragmentation and limiting data availability for population health management.

Geographical disparities represent another significant challenge, with rural and remote communities facing greater barriers to accessing comprehensive MCH services. Al-Hanawi et al. (2018) documented disparities in service availability, staffing levels, equipment, and transportation access that disproportionately affect women and children in remote areas. These access barriers contribute to lower utilization of preventive MCH services and delayed care-seeking for emerging health concerns.

Socio-cultural factors also influence MCH service implementation and utilization. Gender norms, family decision-making patterns, health beliefs, and privacy concerns all affect how families engage with available services. Aldossary et al. (2020) highlighted how these socio-cultural dimensions interact with service design and delivery approaches, emphasizing the need for culturally appropriate implementation strategies that respect community values while promoting evidence-based practices.

3. Administrative Frameworks for MCH Services in Saudi PHCs

3.1 Governance Structures

Governance structures for MCH services in Saudi PHCs operate within a multi-level framework that combines national policy direction, regional operational management, and local implementation. At the national level, the Ministry of Health's Maternal and Child Health General Department establishes strategic priorities, develops clinical guidelines, allocates resources, and monitors overall performance (Ministry of Health, 2020). This central authority provides essential policy coherence while allowing for some regional adaptation based on population needs and local contexts.

Regional health affairs directorates represent an intermediate governance level, translating national policies into operational plans for PHCs within their geographical jurisdiction. Al-Yousuf et al. (2018) documented how these regional structures coordinate MCH service implementation across multiple facilities, manage resource distribution, and provide technical support for quality improvement. The effectiveness of this regional governance layer varies considerably, with some directorates demonstrating strong leadership for MCH services while others provide more limited coordination and support.

The recent implementation of health clusters represents a significant governance innovation with important implications for MCH services. These clusters group PHCs with hospitals and specialized centers within defined geographical areas, creating integrated service networks with unified leadership structures (Albejaidi & Katz, 2020). This model aims to enhance service coordination across the care continuum, an approach particularly relevant for MCH services that frequently require transitions between primary and secondary care. Early evaluations of the cluster model show promising improvements in referral processes and information sharing, though implementation remains ongoing with variable progress across regions (Ministry of Health, 2021).

At the facility level, PHC directors hold primary responsibility for overall center operations, including MCH service delivery. These directors typically report to cluster leadership or regional directorates and oversee all service lines within the center. In larger PHCs, dedicated MCH units often operate under the leadership of a physician coordinator or nurse supervisor who manages day-to-day operations (Almalki et al., 2021). This leadership arrangement creates opportunities for specialized focus on maternal and child health, though authority limitations and resource constraints often challenge these unit-level leaders.

Interprofessional governance mechanisms for MCH services show variable development across Saudi PHCs. Al-Khaldi et al. (2017) found that while 63% of surveyed centers reported having regular quality committee meetings addressing MCH services, only 28% had formal interprofessional teams specifically focused on maternal and child health improvement. These findings suggest opportunities to strengthen collaborative governance approaches that engage diverse professional perspectives in MCH service planning and quality management.

Community engagement in MCH governance remains limited in most Saudi PHCs. Traditional governance models have emphasized professional and administrative authority with minimal formal mechanisms for family or community input. Some PHCs have implemented suggestion systems or satisfaction surveys, but more substantive community participation in service planning, priority setting, or quality oversight is uncommon (Al-Hanawi et al., 2018). This governance gap represents a significant opportunity for development, particularly given the importance of community perspectives in designing culturally appropriate, family-centered MCH services.

3.2 Policy Implementation

Policy frameworks for MCH services in Saudi PHCs have evolved substantially, with increasing emphasis on evidence-based guidelines, standardized protocols, and systematic implementation approaches. The Ministry of Health has developed comprehensive clinical practice guidelines addressing key aspects of maternal and child health including antenatal care, well-child visits, immunization, growth monitoring, developmental screening, and common childhood illnesses (Ministry of Health, 2020). These guidelines align with international standards while incorporating adaptations for the Saudi context.

The translation of these national policies into consistent local practice demonstrates significant variability. Al-Khaldi et al. (2017) evaluated guideline implementation across 48 PHCs, finding that while 92% had copies of MCH guidelines available, only 57% showed evidence of systematic implementation processes such as staff training, compliance monitoring, or performance feedback. This implementation gap contributes to inconsistent service delivery and missed opportunities for evidence-based interventions.

Several policy implementation tools support MCH service delivery in Saudi PHCs. The Mother and Child Health Passport serves as both a clinical documentation tool and patient education resource, providing structured templates for tracking care throughout pregnancy and early childhood (Ministry of Health, 2021). Similarly, standardized assessment forms, screening tools, and clinical decision aids have been developed to support consistent implementation of MCH protocols. The availability and utilization of these tools vary across facilities, with some centers demonstrating comprehensive implementation while others show more selective adoption.

Policy dissemination mechanisms include written directives, training programs, supervisory visits, and digital resources. Almalki et al. (2021) noted that traditional top-down dissemination approaches predominate, with limited attention to implementation science principles such as contextual adaptation, barrier assessment, or enhancement of practitioner motivation. This predominantly directive approach to policy implementation may contribute to compliance gaps, particularly for complex interventions requiring substantial behavior change or interdisciplinary coordination.

Quality standards for MCH services are addressed through both general primary healthcare accreditation requirements and specific maternal-child health quality frameworks. The Central Board for Accreditation of Healthcare Institutions (CBAHI) establishes standards that include essential MCH components, while specialized quality frameworks such as the Maternal and Child Health Quality Assessment Tool provide more detailed requirements focusing specifically on these services (Ministry of Health, 2020). Implementation of these quality standards shows considerable variation, with accredited centers generally demonstrating more consistent policy adherence compared to non-accredited facilities.

Policy coordination across different MCH components presents ongoing challenges. Al-Yousuf et al. (2018) documented how separate policy streams for antenatal care, immunization, well-child surveillance, and nutrition sometimes create fragmentation at the service delivery level. This policy fragmentation can result in duplicate documentation requirements, inconsistent scheduling frameworks, and missed opportunities for integrated family care. Recent policy initiatives have increasingly emphasized life-course approaches and service integration, though implementation of these more holistic frameworks remains in early stages.

3.3 Resource Allocation

Resource allocation for MCH services in Saudi PHCs occurs within the broader healthcare financing system, which primarily operates through annual budget allocations rather than service-based reimbursement models. This budgeting approach provides stable core funding but sometimes limits flexibility in addressing emerging needs or service innovations (Al-Hanawi et al., 2018). Recent financial reforms have introduced some performance-based elements, with additional resources available to centers that achieve specific quality and efficiency targets, though these mechanisms remain limited in scope. resource allocation for MCH services shows significant geographical variation. Ministry of Health (2021) staffing guidelines specify required personnel ratios based on population served and facility classification, including dedicated positions for MCH services in larger centers. However, actual staffing patterns frequently deviate from these standards due to recruitment challenges, budget constraints, and differential resource distribution. Al-Hanawi et al. (2018) documented substantial disparities in MCH staffing levels, with urban centers generally showing better staffing ratios compared to rural facilities.

The allocation of physical infrastructure and equipment for MCH services demonstrates similar variation. Standard facility design guidelines specify dedicated spaces for MCH services including antenatal examination rooms, well-baby clinics, vaccination areas, and health education spaces (Ministry of Health, 2020). Almalki et al. (2021) evaluated infrastructure availability across 87 PHCs, finding that while basic examination spaces were generally available, specialized features such as privacy accommodations, child-friendly environments, and family education areas were inconsistently implemented. Similarly, essential equipment for MCH services showed availability patterns ranging from 62% to 93% across different center types and locations.

Pharmaceutical and supply chain management for MCH services operates through the centralized WASFATY system, which standardizes medication availability and procurement processes across PHCs. This system aims to ensure consistent access to essential MCH medications including vaccines, nutritional supplements, and common pediatric medications (Ministry of Health, 2021). While this centralized approach enhances standardization, supply chain challenges including stock-outs, distribution delays, and limited accommodation of local demand patterns affect some facilities, particularly in remote locations.

Information technology resources demonstrate increasing allocation to MCH services, though digital maturity varies considerably across facilities. The implementation of electronic health records provides digital infrastructure for MCH documentation, while specialized applications support functions such as immunization tracking, growth monitoring, and appointment management (Aldossary et al., 2020). Resource allocation for these digital systems includes both technical infrastructure (hardware, connectivity, maintenance) and implementation support (training, change management, ongoing technical assistance), with substantial variation in both dimensions across different PHCs.

The resource allocation process itself has evolved with recent administrative reforms. The cluster model introduces more localized resource management, with cluster leadership assuming greater responsibility for distributing resources across facilities based on population needs and service priorities (Albejaidi & Katz, 2020). This approach potentially enhances responsiveness to local MCH service needs, though early implementation shows variable effectiveness in addressing historical resource disparities or ensuring adequate prioritization of maternal and child health services within overall resource allocation.

3.4 Quality Monitoring and Improvement

Quality monitoring systems for MCH services in Saudi PHCs incorporate several complementary approaches, though implementation completeness and effectiveness vary substantially across facilities. The Ministry of Health has established a core set of MCH quality indicators addressing service utilization, process adherence, and selected outcomes (Ministry of Health, 2020). These indicators include measures such as antenatal care coverage, vaccination rates, growth monitoring completion, and maternal and infant complication rates. Data collection for these indicators occurs through a combination of routine information systems and periodic audits, with reporting typically aggregated at regional and national levels.

Facility-level quality improvement activities for MCH services show variable implementation. Al-Khaldi et al. (2017) assessed quality improvement practices across 48 PHCs, finding that while 73% reported conducting some quality activities related to MCH services, only 41% demonstrated evidence of systematic improvement cycles with clear problem identification, intervention design, and outcome measurement. This finding suggests significant opportunities to strengthen facility-based quality improvement capabilities specifically focused on maternal and child health services.

Clinical audit processes represent an important quality monitoring mechanism for MCH services. These structured reviews assess adherence to evidence-based guidelines and identify improvement opportunities. The Ministry of Health has developed standardized audit tools for key MCH services including antenatal care, well-child visits, and management of common childhood illnesses (Ministry of Health, 2020). Al-Yousuf et al. (2018) evaluated audit implementation across 56 PHCs, finding that 64% reported conducting regular MCH audits, though audit frequency, methodological rigor, and subsequent improvement actions varied considerably.

Patient experience measurement for MCH services has received increasing attention within quality monitoring systems. Standardized satisfaction surveys addressing both maternal and pediatric services have been implemented in many PHCs, providing insights regarding service accessibility, provider communication, care coordination, and family engagement (Ministry of Health, 2021). However, Almalki et al. (2021) noted limitations in current approaches, including low response rates, limited accommodation of cultural factors affecting experience reporting, and insufficient mechanisms for incorporating feedback into service improvements.

Accreditation requirements established by CBAHI include specific standards relevant to MCH services, creating external quality accountability. These standards address structural requirements (facilities, staffing, equipment), process expectations (guideline adherence, documentation practices, safety protocols), and selected outcome measures (complication rates, sentinel events, service coverage) (CBAHI, 2019). While accreditation participation has expanded substantially, with most PHCs now engaged in the process, achievement of full compliance with MCH-specific standards remains challenging for many facilities.

Supervisory approaches also contribute to quality monitoring for MCH services. Traditionally, supervision emphasized compliance verification rather than supportive development, though recent initiatives have promoted more developmental supervisory models. Aldossary et al. (2020) examined supervisory practices affecting nursing implementation of MCH services, finding that while 82% of nurses reported regular supervision, only 47% characterized this supervision as supportive in developing their clinical capabilities. This finding suggests opportunities to enhance the quality improvement focus of supervisory interactions, particularly for frontline staff delivering MCH services.

Performance feedback mechanisms show similar variation in implementation effectiveness. The Ministry of Health has developed standardized performance dashboards that include MCH indicators, allowing comparison across facilities and regions (Ministry of Health, 2021). However, the timeliness, accessibility, and actionability of this performance feedback vary considerably. Al-Khaldi et al. (2017) found that while 78% of surveyed PHCs received some performance feedback regarding MCH services, only 36% reported receiving this feedback in formats and timeframes that effectively supported improvement actions.

3.5 Information Systems

Information systems supporting MCH services in Saudi PHCs have evolved from predominantly paper-based approaches toward increasingly digital platforms, though this transition remains incomplete with variable implementation across facilities. The cornerstone of current health information infrastructure is the centralized electronic health record system, which provides digital documentation capabilities for key MCH services including antenatal care, well-child visits, immunizations, and growth monitoring (Ministry of Health, 2021). This system aims to enhance information accessibility, support clinical decision-making, and enable performance monitoring across the care continuum.

Implementation of these electronic systems demonstrates substantial variation. Aldossary et al. (2020) assessed digital maturity across 73 PHCs, finding that while basic MCH documentation functions were available in 89% of facilities, more advanced capabilities such as clinical decision support, family-centered views, developmental tracking, and population health management were inconsistently implemented. This digital maturity variation affects both clinical care capabilities and administrative functions such as performance monitoring and quality improvement.

The Mother and Child Health Passport represents a complementary information approach that bridges digital and paper-based systems. This patient-held record documents essential information throughout pregnancy and early childhood, supporting care continuity across different providers and settings (Ministry of Health, 2020). Almutairi et al. (2020) evaluated implementation of this passport system across 64 PHCs, finding 82% distribution rates to eligible families but variable completion quality and inconsistent utilization during clinical encounters. These findings suggest opportunities to strengthen integration between patient-held records and facility-based information systems.

Data utilization for MCH service management shows similar implementation variation. Al-Yousuf et al. (2018) examined how PHC leaders use available MCH data for decision-making, finding that while most facilities regularly collected required indicators, only 43% demonstrated evidence of systematic data analysis and subsequent management actions. This implementation gap reflects both technical limitations in data accessibility and analytical capabilities, and managerial factors including limited training in data-driven decision-making and competing priorities that constrain attention to information utilization.

Interoperability challenges affect information continuity for MCH services that span different care settings. While the national eHealth strategy emphasizes system integration, practical implementation of seamless information exchange remains limited. Almutairi et al. (2020) documented that only 39% of surveyed PHCs reported reliable electronic information exchange with hospitals regarding maternal and newborn care, with most facilities continuing to rely on paper-based referral forms and manual information transfer. These interoperability limitations create particular challenges for high-risk pregnancies and children with complex conditions requiring care across multiple providers and settings.

Population health management capabilities within current information systems show significant potential for enhancing MCH services but remain underdeveloped in most settings. Functions such as automated recall for missed appointments, identification of high-risk families requiring enhanced services, tracking of community-level health indicators, and analysis of service utilization patterns would support more proactive and population-oriented approaches to maternal and child health (Ministry of Health, 2020). Development of these capabilities represents an important frontier for information system enhancement.

Privacy and security considerations have particular relevance for MCH information given the sensitive nature of maternal health data and the extended duration of childhood health records. The National Cybersecurity Authority has established standards for health information protection that address both technical and procedural safeguards (Ministry of Health, 2021). Implementation of these standards within PHC settings varies considerably, with Aldossary et al. (2020) noting inconsistent privacy practices related to information access controls, secure communication channels, and consent management for family health information.

4. Nursing Implementation of MCH Services

4.1 Nursing Roles and Responsibilities

Nursing roles in MCH services within Saudi PHCs encompass a broad scope of clinical, educational, and administrative functions. The formal scope of practice defined by the Saudi Commission for Health Specialties establishes core responsibilities including assessment, basic intervention, education, documentation, and coordination (SCFHS, 2018). Within this general framework, specific MCH-related responsibilities typically include antenatal assessment, growth monitoring, developmental screening, immunization administration, health education, and basic management of common childhood illnesses.

In practice, actual nursing roles show considerable variation across different PHC settings. Aldossary et al. (2020) surveyed nurses working in MCH services across 73 PHCs, finding that role implementation varied based on facility size, staffing patterns, physician availability, and local leadership approaches. In some centers, nurses functioned primarily as assistants to physicians, performing limited assessment and educational functions. In other facilities, particularly those with physician shortages, nurses assumed expanded roles including independent well-child assessments, detailed health coaching, and greater decision-making regarding routine care processes.

The distribution of responsibilities between different nursing qualification levels also varies across settings. The Saudi PHC nursing workforce includes bachelor-prepared nurses, nursing technicians with diploma qualifications, and nursing assistants with certificate-level training (Almalki et al., 2021). While policy frameworks specify different responsibilities based on these qualification levels, practical implementation often reflects local staffing realities rather than strict adherence to scope-based differentiation. Al-Yousuf et al. (2018) noted that in facilities with limited bachelor-prepared nurses, technicians frequently perform functions theoretically reserved for more highly qualified staff, creating potential quality and safety concerns for complex aspects of MCH care.

Documentation responsibilities constitute a significant component of nursing roles in MCH services. Nurses typically maintain both the facility-based record (increasingly electronic) and the Mother and Child Health Passport, recording essential information including growth measurements, developmental milestones, immunizations, health education provided, and planned follow-up (Ministry of Health, 2020). This documentation function ensures information continuity across multiple visits and providers, though heavy documentation requirements sometimes limit time available for direct patient care and family engagement.

Care coordination represents an increasingly emphasized nursing responsibility within MCH services. This function includes facilitating referrals to specialized services, ensuring follow-up for identified concerns, connecting families with community resources, and communicating with other healthcare providers involved in maternal and child care (Aldossary et al., 2020). The effectiveness of this coordination role varies considerably based on established referral systems, communication channels, and nurses' familiarity with available resources and services.

Community outreach activities are included in formal PHC nursing role descriptions but show limited implementation in many settings. These activities include home visiting for high-risk families, community health education sessions, school health initiatives, and outreach to unregistered women and children (Ministry of Health, 2020). Al-Yousuf et al. (2018) found that while 68% of surveyed PHCs included community outreach in nursing job descriptions, only 24% allocated protected time for these activities, with most nurses reporting that facility-based clinical demands prevented meaningful community engagement.

Leadership and quality improvement responsibilities for nurses in MCH services depend largely on their position and qualifications. Senior nurses, particularly those with bachelor's degrees or higher qualifications, often assume supervisory roles for MCH units including staff scheduling, performance monitoring, and quality oversight (Almalki et al., 2021). More broadly, all nursing staff are expected to participate in quality improvement activities such as case reviews, protocol updates, and performance indicator monitoring, though actual engagement in these functions varies considerably across facilities.

4.2 Nursing Competencies and Education

Nursing competencies for MCH services encompass diverse knowledge and skill domains essential for effective care delivery. Core clinical competencies include physical assessment techniques specific to pregnant women and children, growth and developmental evaluation, immunization administration, basic illness assessment, and recognition of warning signs requiring urgent intervention (SCFHS, 2018). These foundational capabilities enable nurses to implement routine protocols and identify situations requiring additional attention or referral.

Educational competencies represent another critical domain for MCH nursing practice. These include skills in health promotion counseling, anticipatory guidance for families, demonstration of childcare techniques, culturally appropriate communication, and adaptation of educational approaches for different literacy levels and learning styles (Ministry of Health, 2020). Effective educational interventions require both technical knowledge regarding recommended practices and communication capabilities to convey this information in ways that enhance family understanding and application.

Technical competencies specific to MCH services include skills in using specialized equipment such as fetal dopplers, growth measurement tools, vision and hearing screening devices, and vaccine administration techniques (Aldossary et al., 2020). Related documentation competencies involve accurate recording of growth parameters, appropriate use of developmental screening tools, proper immunization documentation, and maintenance of both electronic and paper-based records including the Mother and Child Health Passport.

Interprofessional collaboration competencies are increasingly recognized as essential for effective MCH nursing practice. These include skills in team communication, collaborative decision-making, appropriate referral practices, and coordination across disciplines and settings (Al-Yousuf et al., 2018). The complexity of maternal and child health care, particularly for high-risk situations, requires nurses to work effectively with physicians, social workers, nutritionists, and specialists to ensure comprehensive family-centered care.

The educational preparation for nurses working in MCH services varies considerably within the Saudi healthcare system. Bachelor's degree programs include foundational content in maternal and child health nursing, though the depth and clinical application of this content show significant variation across educational institutions (Almalki et al., 2021). Diploma programs for nursing technicians typically provide more limited theoretical foundations and clinical experiences in MCH nursing, focusing on basic assessment and intervention skills rather than comprehensive family-centered approaches or complex clinical reasoning.

Post-graduation professional development for MCH nursing competencies occurs through diverse mechanisms with variable accessibility and effectiveness. The Ministry of Health offers continuing education programs addressing selected MCH topics, while some regional health directorates provide more extensive skill development opportunities through structured courses and clinical mentorship (Ministry of Health, 2021). However, Aldossary et al. (2020) found that only 37% of surveyed PHC nurses reported receiving specialized training in MCH services beyond their basic educational preparation, with particularly limited access for staff in smaller or remote facilities.

Competency assessment for MCH nursing practice remains underdeveloped in many PHC settings. While general nursing competency frameworks exist, systematic assessment specific to maternal and child health skills is uncommon outside larger centers with established quality programs (SCFHS, 2018). Al-Yousuf et al. (2018) documented that only 29% of surveyed PHCs conducted regular competency validation for skills specific to MCH nursing, creating potential quality concerns particularly for complex or high-risk aspects of care.

Specialized certification in maternal and child health nursing remains limited within the Saudi nursing profession. Unlike some international contexts where recognized certifications distinguish nurses with advanced MCH expertise, the Saudi system currently lacks equivalent specialized credentials (Almalki et al., 2021). This certification gap constrains professional development pathways for nurses interested in MCH specialization and limits formal recognition of advanced practice capabilities in this field.

4.3 Clinical Implementation Patterns

Clinical implementation of MCH nursing services in Saudi PHCs demonstrates both standardized elements reflecting national protocols and variable patterns influenced by local factors. Antenatal nursing care typically follows structured visit schedules with defined assessment components including blood pressure monitoring, weight tracking, fetal heart rate assessment, and basic screening for pregnancy complications

(Ministry of Health, 2020). Aldossary et al. (2020) found generally high adherence to these physical assessment protocols (87-94% compliance) across surveyed facilities, though implementation of accompanying education and psychosocial assessment components showed greater variation (42-76% compliance).

Well-child nursing services similarly follow standardized visit schedules defined by national protocols, with specific assessments recommended at different age milestones from birth through six years (Ministry of Health, 2020). Core nursing functions within these visits include growth measurement, developmental screening, immunization administration, nutritional assessment, and anticipatory guidance. Al-Yousuf et al. (2018) evaluated implementation patterns across 56 PHCs, finding high completion rates for growth measurement (92%) and immunization (94%), but lower adherence to comprehensive developmental assessment (63%) and structured anticipatory guidance (57%).

Growth monitoring represents a fundamental MCH nursing function implemented across virtually all Saudi PHCs. This practice includes accurate measurement of weight, length/height, and head circumference, plotting these parameters on standardized growth charts, and identifying children whose growth patterns warrant further evaluation (Ministry of Health, 2020). While the basic measurement procedures show relatively consistent implementation, Almutairi et al. (2020) noted that interpretation of growth patterns and subsequent nursing actions for concerning results demonstrated greater variability, with only 58% of surveyed nurses correctly identifying appropriate interventions for common growth variations.

Developmental monitoring shows more variable implementation compared to physical growth assessment. National protocols recommend systematic developmental screening at defined intervals using standardized tools such as the Saudi Modified Prescreening Developmental Questionnaire (Ministry of Health, 2020). However, Al-Khaldi et al. (2017) found that only 47% of surveyed PHCs implemented comprehensive developmental screening according to recommended protocols, with many facilities conducting only informal developmental observation without standardized assessment tools or documentation. This implementation gap creates risks for delayed identification of developmental concerns that might benefit from early intervention.

Immunization administration demonstrates relatively consistent implementation across PHCs, reflecting strong national emphasis on vaccination coverage. Nursing responsibilities in this domain include vaccine storage management, appropriate administration techniques, documentation, and education regarding expected effects and follow-up requirements (Ministry of Health, 2020). Almalki et al. (2021) documented high adherence to technical administration protocols (91-96%) across surveyed facilities, though accompanying education practices showed more variation, with comprehensive anticipatory guidance provided in only 68% of observed immunization encounters.

Health education implementation for MCH services demonstrates significant variability in both content and delivery approaches. While standard educational topics are defined in national protocols, including breastfeeding, complementary feeding, child safety, developmental stimulation, and illness prevention (Ministry of Health, 2020), actual educational delivery varies substantially. Aldossary et al. (2020) found that education was frequently provided through brief verbal instruction (average 4.3 minutes per encounter) with limited use of visual aids, teach-back techniques, or assessment of understanding. More comprehensive educational approaches were observed primarily in facilities with designated health educators or specialized MCH nurses with protected time for educational functions.

Implementation of nursing services for common childhood illnesses follows the Integrated Management of Childhood Illness (IMCI) framework adopted by the Ministry of Health. This approach includes structured assessment protocols, classification of illness severity, and defined management actions for conditions such as respiratory infections, diarrhea, fever, and nutritional problems (Ministry of Health, 2020). Al-Yousuf et al. (2018) evaluated IMCI implementation across 56 PHCs, finding that while 82% reported adopting the framework, only 53% demonstrated consistent nursing implementation of all recommended assessment components, with particular gaps in danger sign evaluation and nutritional assessment.

4.4 Collaborative Practice Models

Collaborative practice models for MCH services in Saudi PHCs demonstrate evolving approaches to interprofessional teamwork, though implementation patterns vary considerably across facilities. The traditional collaboration model positioned physicians as primary decision-makers with nurses in supporting roles focused on task implementation rather than shared clinical reasoning (Almalki et al., 2021). This hierarchical model remains common in many PHCs, particularly those with longstanding organizational cultures or leadership approaches that emphasize professional separation rather than integrated practice.

More progressive collaborative models are emerging in some facilities, particularly those participating in recent primary healthcare reform initiatives. These approaches emphasize defined yet complementary roles, mutual respect for different professional contributions, shared decision-making procedures, and integrated care planning (Ministry of Health, 2021). Al-Yousuf et al. (2018) identified several PHCs implementing enhanced collaborative models for MCH services, characterized by joint clinical protocols, regular interprofessional case discussions, shared quality improvement activities, and coordinated family education.

Formal structures supporting collaborative practice show variable implementation across Saudi PHCs. Almalki et al. (2021) surveyed organizational arrangements in 87 PHCs, finding that while 73% reported having regular staff meetings involving multiple professions, only 41% had established specific collaborative mechanisms for MCH services such as joint rounds, structured communication tools, or defined consultation processes. This structural variation significantly influences how effectively nurses and physicians coordinate their respective contributions to maternal and child healthcare.

Collaborative documentation practices represent another dimension of interprofessional integration for MCH services. Electronic health record implementations increasingly incorporate shared documentation frameworks that allow different professionals to contribute to integrated clinical records (Ministry of Health, 2020). However, Aldossary et al. (2020) noted that even with shared technical platforms, actual documentation patterns often reflect professional separation rather than true integration, with parallel rather than collaborative recording and limited cross-referencing between nursing and physician documentation.

Referral and consultation processes between nurses and physicians show varying degrees of formalization and effectiveness. In some PHCs, structured referral criteria and communication templates facilitate appropriate escalation of concerns identified during nursing assessments (Ministry of Health, 2020). In other settings, these processes remain informal and highly dependent on interpersonal relationships and individual communication styles. Al-Khaldi et al. (2017) found that only 43% of surveyed PHCs had established clear guidelines for when and how nurses should involve physicians in MCH care decisions, contributing to both missed consultation opportunities and unnecessary escalations.

Team leadership approaches significantly influence collaborative practice for MCH services. Traditional models designate physicians as team leaders regardless of management experience or leadership training, while emerging approaches increasingly recognize leadership capabilities rather than professional background as the primary qualification for team leadership (Almalki et al., 2021). In some innovative PHCs, experienced nurses with appropriate qualifications now serve as MCH unit coordinators, leading multidisciplinary teams including physicians, demonstrating an important evolution in collaborative practice models.

Collaborative quality improvement represents a particularly promising approach for enhancing interprofessional practice for MCH services. These initiatives bring together different professionals to identify improvement opportunities, design interventions, and evaluate outcomes collectively (Ministry of Health, 2021). Al-Yousuf et al. (2018) described several successful examples of collaborative quality projects addressing issues such as antenatal care completion, developmental screening implementation, and

management of childhood asthma, noting how these shared improvement experiences often catalyzed broader collaborative practice changes beyond the specific project focus.

Educational preparation for collaborative practice remains limited within professional training programs for both nurses and physicians. Almalki et al. (2021) noted that most pre-professional education continues to occur in separate disciplinary silos, with limited structured opportunities for interprofessional learning experiences. This educational pattern creates challenges for implementing collaborative models in practice settings, as graduates enter the workforce without well-developed teamwork skills or clear understanding of how different professions can most effectively complement each other in providing comprehensive MCH services.

4.5 Family Engagement Approaches

Family engagement approaches in MCH services vary considerably across Saudi PHCs, reflecting both national guidance and local implementation patterns. At the most basic level, family engagement involves providing information about maternal and child health recommendations, typically through direct verbal communication during healthcare visits (Ministry of Health, 2020). This informational approach represents the most commonly implemented engagement strategy, though its effectiveness depends significantly on communication quality, cultural appropriateness, and adaptation to family characteristics including education level and health literacy.

More comprehensive family engagement approaches incorporate shared decision-making principles, explicitly involving family members in care planning rather than simply providing predefined recommendations. Aldossary et al. (2020) assessed decision-making patterns across 73 PHCs, finding that while 89% of nurses reported valuing family input, only 36% demonstrated consistent implementation of structured shared decision-making approaches such as option presentation, preference elicitation, and collaborative plan development. This implementation gap reflects both limited training in shared decision-making techniques and time constraints affecting clinical encounters.

Family education represents another important engagement dimension, with approaches ranging from basic instruction to more comprehensive skill development and empowerment strategies. Standard topics addressed through family education include nutrition, developmental stimulation, illness recognition, safety practices, and preventive health measures (Ministry of Health, 2020). Educational methods show considerable variation, with Al-Yousuf et al. (2018) documenting approaches ranging from brief verbal instructions (most common) to more elaborate strategies including demonstration, practice opportunities, visual aids, and take-home materials (less frequently implemented).

The inclusion of extended family members in MCH services reflects Saudi cultural patterns emphasizing family-based decision-making and intergenerational caregiving. While national protocols recognize the importance of engaging influential family members such as grandmothers and fathers, practical implementation varies substantially (Ministry of Health, 2020). Almutairi et al. (2020) found that only 42% of surveyed PHCs had explicit strategies for involving extended family in MCH services, with most facilities focusing primarily on mothers as the main engagement target despite the broader family influence on maternal and child health practices.

Practical barriers to family engagement include time limitations, privacy constraints, language differences, and cultural factors. Aldossary et al. (2020) documented that nurses in busy PHCs averaged only 12.7 minutes per MCH encounter, limiting opportunities for in-depth family engagement beyond essential clinical tasks. Physical space limitations in many facilities constrain privacy for sensitive discussions, while linguistic differences between staff and families create additional communication challenges, particularly in facilities with high proportions of expatriate healthcare workers (Al-Yousuf et al., 2018).

Group-based approaches offer promising strategies for enhancing family engagement while addressing resource constraints. These approaches bring together multiple families for shared education, peer support, and collective problem-solving around common MCH concerns (Ministry of Health, 2021). Implementation of group models remains limited, with Almalki et al. (2021) finding that only 27% of

surveyed PHCs offered any form of group-based MCH services. Where implemented, these approaches show promising results for both family satisfaction and efficient use of nursing resources, suggesting opportunities for broader application.

Digital engagement strategies represent an emerging approach for extending family engagement beyond facility-based interactions. These include educational websites, mobile applications, text message reminders, and virtual consultation options (Ministry of Health, 2021). While national digital health initiatives are expanding these capabilities, actual implementation for MCH services remains variable. Aldossary et al. (2020) found that 68% of surveyed PHCs used text messages for appointment reminders, but only 23% employed more interactive digital engagement approaches such as educational applications or virtual support options.

Measurement of family engagement experiences provides important feedback for service improvement but shows limited implementation in many settings. While the Ministry of Health has developed standard satisfaction surveys that include engagement-related questions, administration practices and response rates vary considerably (Ministry of Health, 2020). Beyond these general satisfaction measures, more specific assessment of engagement quality, family activation, or partnership experiences remains uncommon, creating challenges for systematically improving engagement approaches based on family perspectives.

5. Challenges and Barriers

5.1 Administrative Challenges

Administrative challenges affecting MCH services in Saudi PHCs include governance fragmentation, policy implementation inconsistencies, resource allocation limitations, information system gaps, and quality monitoring weaknesses. These challenges operate at multiple levels from national policy development through local implementation, creating systemic constraints that affect service delivery regardless of individual provider motivation or capability.

Governance fragmentation represents a fundamental administrative challenge affecting service coordination and accountability. Despite recent cluster-based reforms, MCH services often remain divided across multiple programs with separate reporting lines, distinct budget allocations, and independent quality expectations (Albejaidi & Katz, 2020). Al-Yousuf et al. (2018) documented how antenatal care, immunization, well-child surveillance, nutrition programs, and illness management frequently operate as parallel rather than integrated service streams, creating coordination gaps that affect both efficiency and continuity of care. This fragmentation complicates comprehensive family-centered approaches by requiring navigation across multiple service components rather than presenting a unified care experience.

Policy implementation inconsistency creates another significant administrative challenge for MCH services. While the Ministry of Health has developed comprehensive clinical guidelines and service standards, mechanisms for ensuring consistent implementation across diverse facilities remain limited (Ministry of Health, 2020). Al-Khaldi et al. (2017) identified several implementation barriers including inadequate dissemination approaches, limited training on new protocols, insufficient implementation tools, and weak compliance monitoring. These barriers result in variable adherence to evidence-based practices, contributing to quality disparities across different geographical areas and facility types.

Resource allocation limitations affect both overall MCH service capacity and specific improvement initiatives. Budget constraints, staffing shortages, infrastructure limitations, and supply chain challenges all impact service delivery capabilities (Al-Hanawi et al., 2018). These resource limitations are often more pronounced in rural and remote areas, creating geographical disparities in service availability and quality. Additionally, improvement initiatives frequently lack dedicated resources for implementation support, staff training, or performance incentives, limiting their effectiveness and sustainability despite sound conceptual foundations.

Information system limitations constrain both clinical care coordination and administrative oversight for MCH services. While electronic health records have been widely implemented, functionality gaps affect critical MCH applications including developmental tracking, family-centered views, decision support for high-risk situations, and integration with community-based services (Aldossary et al., 2020). These technical limitations are compounded by variable digital literacy among staff, inconsistent data quality management, and limited analytical capabilities at the facility level, reducing the potential value of collected information for both clinical and administrative purposes.

Quality monitoring challenges include limited outcome measurement, delayed feedback cycles, insufficient improvement support, and weak accountability mechanisms. Al-Khaldi et al. (2017) noted that current monitoring systems emphasize process compliance and output production rather than meaningful outcome assessment or patient experience measurement. Additionally, performance data often returns to facilities with significant delays and limited actionable insights, reducing its utility for continuous improvement. When quality gaps are identified, many facilities lack structured improvement capabilities or external support for addressing complex quality challenges, creating persistent performance plateaus despite identified improvement opportunities.

Change management limitations represent another significant administrative challenge affecting MCH service improvement. The implementation of new care models, clinical protocols, or technological systems frequently occurs without structured change management approaches addressing workflow implications, staff concerns, or implementation barriers (Almalki et al., 2021). This implementation gap contributes to limited adoption of innovations, superficial rather than substantive practice changes, and rapid regression to previous patterns after initial implementation efforts conclude. Sustainable improvement requires more sophisticated change management approaches that address both technical and adaptive challenges in modifying established practices.

Administrative capacity development remains limited in many PHCs, constraining local leadership for MCH service improvement. While center directors and department heads hold formal management responsibilities, many have received minimal management training and must balance administrative functions with ongoing clinical duties (Al-Yousuf et al., 2018). This capacity limitation affects critical management functions including strategic planning, performance oversight, resource optimization, team development, and quality improvement facilitation. Without strengthened administrative capabilities, even well-designed MCH service improvements face implementation challenges at the facility level.

5.2 Nursing Practice Challenges

Nursing practice challenges affecting MCH services in Saudi PHCs include workforce shortages, competency gaps, limited autonomy, role confusion, collaboration barriers, and professional development limitations. These challenges influence how effectively nurses implement their responsibilities within maternal and child health services, constraining their potential contributions despite formal policies positioning nursing as essential to PHC-based care.

Workforce shortages represent a fundamental nursing challenge affecting MCH service implementation. Staffing levels in many PHCs fall below Ministry of Health recommended ratios, creating workload pressures that limit time available for comprehensive assessment, education, and family engagement (Almalki et al., 2021). These shortages affect both absolute numbers of nursing personnel and the distribution of different qualification levels, with particularly limited availability of bachelor-prepared nurses in many facilities. The resulting workload intensity creates risks for rushed care, missed assessment components, abbreviated education, and burnout among nursing staff attempting to meet all service expectations with inadequate resources.

Competency gaps in MCH-specific knowledge and skills affect nursing practice quality, particularly for complex or specialized aspects of maternal and child health care. Aldossary et al. (2020) surveyed nurses working in MCH services, finding variable proficiency in areas such as high-risk pregnancy identification, developmental assessment, growth pattern interpretation, and management of common childhood

illnesses. These competency limitations reflect both gaps in basic professional education and limited access to specialized continuing education or clinical mentorship for MCH services. The resulting practice variations contribute to inconsistent service quality and missed opportunities for early intervention when health concerns arise.

Limited professional autonomy constrains nursing contributions to MCH services in many PHCs. Traditional practice models often restrict nursing roles to task implementation rather than independent assessment, clinical decision-making, or care planning (Al-Yousuf et al., 2018). These limitations persist despite expanding formal scope of practice definitions from regulatory authorities, reflecting cultural norms about professional roles as much as official policy constraints. Without appropriate autonomy aligned with their education and capabilities, nurses cannot fully utilize their potential contributions to maternal and child healthcare, particularly in facilities with limited physician availability where nursing independence could significantly enhance service accessibility.

Role confusion between different nursing qualification levels and between nurses and other professionals creates implementation challenges for MCH services. The Saudi healthcare system includes multiple nursing categories (professional nurses, technical nurses, nursing assistants) with theoretically distinct responsibilities, yet practical implementation often blurs these boundaries based on local staffing patterns and historical practices (Almalki et al., 2021). Similar confusion sometimes exists regarding boundaries between nursing and other disciplines such as health education specialists or social workers. This role ambiguity creates risks for both practice gaps (when responsibilities fall between roles) and inefficient duplication (when multiple providers perform similar functions without clear coordination).

Collaboration barriers between nurses and physicians affect comprehensive MCH service delivery in many PHCs. These barriers include hierarchical professional cultures, communication challenges, limited shared decision-making, separate documentation practices, and minimal team training (Al-Yousuf et al., 2018). The resulting collaboration gaps constrain interprofessional learning, complicate care coordination, and potentially compromise care quality when relevant information or perspectives are not effectively shared across disciplinary boundaries. The impact of these collaboration limitations is particularly significant for complex situations requiring integrated expertise from multiple professional perspectives.

Professional development pathways for MCH nursing specialization remain limited within the Saudi healthcare system. Unlike some health systems that offer clear career progression through specialized certification, advanced practice roles, or clinical ladder programs specific to maternal and child health, the Saudi system provides few formal advancement opportunities for nurses focusing on this practice area (Almalki et al., 2021). This limitation affects both individual career satisfaction and system-level capability development, as nurses with interest in MCH specialization have limited incentives or mechanisms to develop advanced expertise in this area.

Leadership opportunities for nurses within MCH services show similar constraints in many PHCs. Formal leadership positions such as department heads or program coordinators remain predominantly filled by physicians even when qualified nurses are available, reflecting traditional professional hierarchies rather than capability-based selection (Aldossary et al., 2020). When nurses do assume leadership roles, they often receive limited leadership development support or organizational authority compared to physician leaders in similar positions. These leadership limitations constrain nursing influence on service design, resource allocation, and quality priorities for maternal and child healthcare.

Documentation burden represents another significant nursing challenge affecting MCH service implementation. Nurses typically hold primary responsibility for completing multiple documentation requirements, including electronic health records, the Mother and Child Health Passport, program-specific forms, and quality monitoring documentation (Ministry of Health, 2020). These extensive recording expectations consume substantial time that might otherwise be available for direct patient care or family engagement. While documentation serves important purposes for care continuity and quality monitoring, current approaches often create inefficient duplication and excessive administrative workload for nursing staff.

5.3 Systemic and Contextual Barriers

Systemic and contextual barriers affecting MCH services in Saudi PHCs extend beyond specific administrative or nursing challenges to include broader health system factors, socio-cultural influences, geographical considerations, and policy environment constraints. These systemic barriers create fundamental conditions that shape service implementation regardless of facility-level efforts to enhance maternal and child healthcare quality and accessibility.

Health system fragmentation creates coordination challenges for MCH services that span different care levels and provider organizations. Despite policy emphasis on integrated care pathways, practical implementation of seamless transitions between primary, secondary, and tertiary care remains limited for both maternal and pediatric services (Albejaidi & Katz, 2020). Al-Yousuf et al. (2018) documented how referral processes, information sharing, consultation mechanisms, and return-to-primary-care pathways often function sub-optimally, creating risks for care discontinuity, particularly for complex conditions requiring multiple provider involvement. While recent cluster-based reforms aim to address these integration challenges, practical implementation of truly cohesive care networks remains a work in progress.

Geographical disparities significantly affect MCH service accessibility and quality across different regions of Saudi Arabia. Rural and remote communities face particular challenges including limited facility distribution, staffing difficulties, transportation barriers, and infrastructure constraints (Al-Hanawi et al., 2018). These geographical challenges create inequitable access to comprehensive MCH services, with families in underserved areas often receiving more limited service options, less specialized expertise, and fewer supporting resources compared to urban populations. Addressing these disparities requires targeted approaches that acknowledge the unique implementation challenges in different geographical contexts rather than assuming uniform application of standardized models.

Sociocultural factors influence both service design considerations and utilization patterns for MCH services. Cultural norms regarding gender roles, family decision-making, privacy expectations, and health beliefs all affect how families engage with available services (Aldossary et al., 2020). While Saudi society has experienced significant social evolution in recent years, traditional values continue to influence healthcare interactions, particularly for sensitive aspects of maternal and child health. Services designed without sufficient attention to these cultural dimensions may face implementation challenges regardless of their technical quality or evidence base.

Educational disparities within the population affect health literacy, preventive care engagement, and family capacity to implement recommended health practices. Despite overall educational advancement in Saudi society, significant variations in educational attainment persist across different regions and demographic groups (Almalki et al., 2021). These educational differences influence how effectively families can engage with MCH services, understand health recommendations, navigate the healthcare system, and implement suggested health promotion activities at home. Service approaches that assume uniform education levels or health literacy capabilities may inadvertently create access barriers for more vulnerable population segments.

Workforce development pipeline limitations constrain the availability of appropriately prepared professionals for MCH services. While nursing education capacity has expanded significantly, programs specifically preparing nurses for maternal and child health specialization remain limited (Almalki et al., 2021). Similarly, physician training for primary care roles including MCH services receives less emphasis compared to hospital-based specialties. These educational patterns create ongoing workforce challenges that affect service implementation regardless of policy intentions or administrative frameworks, as the necessary human resources with appropriate specialized preparation remain insufficient to meet population needs.

Financial sustainability challenges affect long-term service development despite significant healthcare investments. Budget allocation processes, financial incentive structures, and resource prioritization

decisions do not always align optimally with MCH service needs (Al-Hanawi et al., 2018). Preventive services, which constitute a core component of effective maternal and child healthcare, sometimes receive lower resource priority compared to more visible curative interventions or technological acquisitions. This financial dynamic creates challenges for sustaining comprehensive MCH services, particularly more resource-intensive components such as developmental programs, family support services, or community outreach initiatives.

Policy coordination limitations affect coherent development of MCH services across multiple government entities with relevant responsibilities. While the Ministry of Health holds primary authority for healthcare delivery, other ministries and agencies influence important determinants of maternal and child health including education, social services, housing, and environmental conditions (Albejaidi & Katz, 2020). Coordination mechanisms between these entities remain underdeveloped, limiting the potential for truly comprehensive approaches addressing both healthcare services and broader social determinants affecting family wellbeing.

Research and evaluation gaps constrain evidence-based improvement of MCH services within the Saudi context. While international evidence provides important guidance, contextual factors influence how effectively different service models and implementation approaches translate to Saudi PHCs (Almalki et al., 2021). Limited Saudi-specific research regarding optimal MCH service delivery models, implementation strategies, and improvement approaches creates uncertainty about which interventions will prove most effective in addressing local challenges and priorities. This evidence gap sometimes leads to adoption of international models without sufficient adaptation to local contexts or adequate evaluation of their effectiveness within Saudi primary healthcare settings.

6. Improvement Framework and Recommendations

6.1 Integrated Service Delivery Models

Integrated service delivery models offer promising approaches for enhancing MCH services in Saudi PHCs by addressing current fragmentation while optimizing resource utilization. These models organize services around family needs rather than professional or program boundaries, creating more cohesive care experiences while improving coordination across the maternal and child health continuum. Implementation requires thoughtful attention to both administrative structures and frontline care practices to achieve meaningful integration rather than superficial co-location or nominal coordination.

Integrated MCH service pathways represent a foundational approach for enhancing service cohesion. These structured pathways define standardized care sequences spanning preconception through early childhood, incorporating preventive, promotive, and basic curative services within coherent family-centered journeys (Ministry of Health, 2021). Practical implementation includes developing unified scheduling frameworks that coordinate different service components (antenatal care, immunization, developmental monitoring, etc.), standardized assessment tools covering multiple health dimensions simultaneously, and coordinated documentation systems that reduce duplication while enhancing information continuity.

Physical space redesign supports integrated service delivery by creating environments conducive to comprehensive family care. Effective facility designs include family-focused consultation spaces accommodating multiple family members, flexible areas supporting both individual and group interactions, child-friendly features encouraging positive healthcare experiences, adequate privacy for sensitive discussions, and convenient co-location of frequently combined services (Ministry of Health, 2020). While complete facility renovation may exceed available resources, targeted modifications to existing spaces can significantly enhance integration capabilities even within current infrastructure constraints.

Workforce models supporting integration include multiskilled provider approaches, care team structures, and family navigator roles. Multiskilled provider models equip individual clinicians (particularly nurses) with capabilities spanning multiple MCH components, allowing more comprehensive service delivery during single encounters (Aldossary et al., 2020). Care team structures establish consistent groups of providers who collectively cover required MCH expertise while developing coordinated practice patterns

and shared knowledge of specific family situations. Family navigator roles create dedicated positions focusing explicitly on helping families coordinate across different services, particularly beneficial for vulnerable families with complex needs or limited system navigation capabilities.

Information systems supporting integration require both technical capabilities and implementation approaches that enhance rather than impede cohesive care delivery. Key technical requirements include family-centered rather than encounter-centered record structures, integrated growth and development tracking tools, shared care planning functions, and unified documentation templates that reduce redundant data entry (Ministry of Health, 2021). Beyond these technical elements, implementation approaches supporting actual usage during clinical encounters are equally important, including user-friendly interfaces, efficient workflows, appropriate hardware placement, and sufficient training to ensure technology enhances rather than distracts from family interactions.

Recommended implementation strategies for integrated service models include:

1.   Develop standardized MCH service pathways clearly defining how different care components connect across the maternal-child continuum, with explicit guidance for coordinating traditionally separate services within cohesive family experiences.

2.   Implement modified scheduling systems that combine related MCH services into coordinated visits, reducing family burden while enhancing efficiency through appropriately sequenced service delivery.

3.   Establish interprofessional care teams with consistent membership, scheduled communication mechanisms, shared quality objectives, and collective responsibility for defined family populations.

4.   Redesign clinical workflows to support comprehensive assessment, utilizing standardized tools that efficiently capture information spanning multiple MCH domains during single encounters.

5.   Create unified family education approaches addressing related topics cohesively rather than as separate categorical interventions, utilizing consistent messaging across different providers and service components.

6.   Implement family-centered documentation systems that reduce redundancy while enhancing information continuity, with particular attention to efficiently capturing information that informs multiple service components.

7.   Develop phased implementation approaches that build integration incrementally, starting with high-impact service combinations before progressing to more comprehensive integration models.

6.2 Workforce Development Strategies

Workforce development strategies address critical human resource dimensions affecting MCH service quality and sustainability in Saudi PHCs. Comprehensive approaches engage both administrative systems supporting professional development and nursing-specific interventions enhancing clinical capabilities. Effective strategies address not only technical knowledge and skills but also collaborative capabilities, leadership development, and professional engagement to create sustainable workforce excellence.

Competency-based professional development systems provide structured approaches for building MCH-specific capabilities among nursing staff. These systems define essential competencies across different practice dimensions, assess current performance against these standards, deliver targeted development interventions addressing identified gaps, and validate competency achievement through objective assessment (SCFHS, 2018). Practical implementation includes developing competency profiles specific to MCH nursing roles, creating assessment tools measuring both knowledge and skill application, and establishing documentation systems tracking competency development over time.

Structured mentorship programs accelerate development of clinical expertise while providing ongoing support for practice enhancement. Formal mentorship arrangements pair experienced MCH nurses with more junior colleagues, establishing protected time for observation, guided practice, case discussion, and reflective learning (Aldossary et al., 2020). Effective implementation includes mentor selection based on

both clinical expertise and teaching capability, structured mentoring processes with defined activities and documentation expectations, and organizational support recognizing mentorship as valuable professional work rather than an optional add-on responsibility.

Specialized MCH nursing roles create opportunities for advanced practice development and enhanced service capabilities. These roles establish positions with expanded responsibilities, specialized expertise, and greater decision-making authority in maternal and child healthcare, supported by appropriate education and regulatory recognition (Ministry of Health, 2021). Implementation approaches include developing role definitions aligned with identified service needs, establishing appropriate educational qualifications and experience requirements, creating clear scope of practice guidelines, and integrating these specialized roles within team-based care models that optimize their contribution.

Team-based learning approaches support collective capability development while enhancing collaborative practice. These approaches engage interprofessional groups in shared learning experiences addressing both clinical content and teamwork skills, creating common understanding while strengthening collaborative relationships (Almalki et al., 2021). Practical implementation includes case-based learning sessions, simulation exercises, quality improvement projects, and shared conference attendance, all designed to develop capabilities across the entire MCH team rather than within separate professional silos.

Leadership development pathways prepare nurses for expanded roles in directing MCH services and leading improvement initiatives. These pathways combine leadership skill development with opportunities to apply these capabilities in progressively responsible positions, creating a pipeline of nursing leaders prepared to advance maternal and child healthcare (Aldossary et al., 2020). Implementation strategies include identifying high-potential nurses for development investment, providing formal leadership education combined with applied projects, establishing mentoring relationships with senior leaders, and creating opportunities to lead significant initiatives with appropriate support and recognition.

Digital learning solutions extend professional development reach while accommodating workforce constraints. These approaches utilize technology to deliver education, performance support, and professional networking across geographical distances and around scheduling limitations that often constrain traditional development approaches (Ministry of Health, 2021). Effective implementation includes developing microlearning modules addressing specific MCH topics, creating virtual communities of practice for peer learning and support, establishing clinical decision support tools providing guidance at the point of care, and utilizing mobile platforms that make learning accessible within busy clinical environments.

Recommended workforce development strategies include:

1.   Develop comprehensive competency frameworks specifically addressing MCH nursing practice, defining expected performance levels across both general nursing domains and specialized maternal-child health dimensions.

2.   Implement structured competency assessment processes using multiple methods including knowledge testing, skill demonstration, case analysis, and direct observation of clinical practice with families.

3.   Establish formal mentorship programs pairing experienced MCH nurses with developing practitioners, with protected time, structured activities, and organizational recognition for both mentors and mentees.

4.   Create specialized roles for nurses with advanced MCH expertise, including positions focusing on high-risk pregnancy support, developmental assessment, lactation support, and family education coordination.

5.   Develop team-based learning programs engaging interprofessional groups in shared education addressing common clinical challenges, collaborative practices, and service improvement opportunities.

6.   Implement leadership development pathways specifically preparing nurses for MCH leadership roles, combining formal education with applied projects, mentoring relationships, and progressive leadership experiences.

7.   Utilize digital learning platforms to extend development reach, creating accessible education addressing MCH practice needs while accommodating workforce constraints and geographical distribution.

8.   Establish professional recognition systems acknowledging development achievement, clinical excellence, and leadership contribution in MCH nursing practice.

6.3 Quality Improvement Approaches

Quality improvement approaches provide systematic methods for enhancing MCH service effectiveness, efficiency, safety, and patient experience in Saudi PHCs. Comprehensive approaches combine administrative frameworks establishing improvement infrastructure with practical implementation methods that engage frontline staff in meaningful enhancement activities. Successful quality initiatives address both technical aspects of clinical care and service design elements affecting how families experience and engage with available MCH services.

Comprehensive quality monitoring systems establish mechanisms for systematically assessing MCH service performance across multiple dimensions. Effective monitoring frameworks include balanced measurement sets addressing structure, process, outcome, and experience domains; data collection methods balancing completeness with collection burden; analysis approaches identifying meaningful patterns and improvement opportunities; and reporting formats that make information accessible and actionable for different stakeholders (Ministry of Health, 2021). Implementation requires both technical infrastructure supporting measurement activities and quality culture development encouraging honest assessment and improvement orientation rather than compliance or blame dynamics.

Clinical microsystem improvement represents a particularly effective approach for enhancing frontline MCH service delivery. This methodology focuses on the specific clinical units where care actually occurs, engaging the multidisciplinary teams providing MCH services in structured improvement cycles addressing locally identified priorities (Almalki et al., 2021). Implementation includes establishing improvement teams with diverse representation, training in basic improvement methods, developing assessment approaches identifying local improvement opportunities, implementing plan-do-study-act cycles, and creating mechanisms to spread successful changes across similar settings.

Family-centered quality approaches explicitly incorporate family perspectives and partnership in improvement activities. These approaches engage families as essential partners in both defining quality priorities and designing service enhancements, recognizing that family experience represents a fundamental dimension of MCH service quality (Aldossary et al., 2020). Practical implementation includes family advisory groups providing structured input on service design, experience surveys capturing systematic feedback, co-design workshops engaging families and providers in collaborative improvement, and family representation on quality committees addressing maternal and child health services.

Evidence-based practice implementation bridges the gap between research knowledge and clinical application for MCH services. These approaches create systematic processes for identifying relevant evidence, adapting findings to local contexts, developing implementation strategies addressing potential barriers, and evaluating outcomes following practice changes (Al-Yousuf et al., 2018). Effective implementation includes establishing evidence review processes addressing MCH-specific questions, developing locally adapted clinical pathways incorporating best practices, creating implementation toolkits supporting practice change, and monitoring both implementation fidelity and clinical outcomes after new practices are introduced.

Quality collaborative models accelerate improvement by connecting teams working on similar MCH challenges across multiple facilities. These structured initiatives establish shared aims, measurement approaches, and learning activities while providing improvement coaching and creating positive

competitive dynamics that motivate enhanced performance (Ministry of Health, 2021). Implementation includes selecting high-priority MCH improvement targets, recruiting facility teams committed to these objectives, providing collaborative learning sessions combined with local action periods, measuring progress using standardized metrics, and sharing successful strategies across participating sites.

Technology-enabled quality tools enhance improvement capabilities through data visualization, automated monitoring, decision support, and communication platforms. These digital approaches complement traditional quality methods by making performance information more accessible, streamlining measurement processes, standardizing best practices, and facilitating collaboration across care teams (Aldossary et al., 2020). Effective implementation includes developing MCH-specific quality dashboards displaying key performance indicators, creating automated alert systems identifying quality concerns, implementing order sets and documentation templates supporting evidence-based practice, and utilizing communication platforms connecting improvement teams across different locations.

Recommended quality improvement approaches include:

1. Develop comprehensive MCH quality monitoring frameworks addressing structure, process, outcome, and experience dimensions, with balanced metric sets providing meaningful insight without excessive measurement burden.

2. Establish unit-based quality teams within MCH services, with multidisciplinary membership, protected time for improvement activities, basic quality method training, and authority to implement tested changes.

3. Implement family engagement mechanisms including advisory councils, experience surveys, co-design workshops, and committee representation to incorporate family perspectives in quality priorities and improvement designs.

4. Create structured processes for evidence-based practice implementation, including evidence review teams, clinical pathway development, implementation toolkits, and outcome evaluation processes specific to MCH services.

5. Participate in collaborative improvement initiatives addressing high-priority MCH quality challenges, connecting teams across multiple facilities through shared aims, standardized measures, and structured learning activities.

6. Implement quality recognition programs acknowledging successful improvement achievements, creating positive incentives for teams demonstrating meaningful quality enhancement in MCH services.

7. Develop technology-enabled quality tools including performance dashboards, automated monitoring systems, evidence-based decision supports, and communication platforms connecting improvement teams across different locations.

8. Establish leadership systems supporting quality culture development, including visible leader commitment, resource allocation for improvement activities, barrier removal, and consistent communication emphasizing quality as a core organizational priority.

6.4 Administrative System Enhancements

Administrative system enhancements address structural factors affecting MCH service implementation across Saudi PHCs. These approaches modify organizational architecture, governance mechanisms, policy frameworks, resource allocation systems, and accountability structures to create environments more conducive to high-quality maternal and child healthcare. Effective administrative enhancements align system design with desired service characteristics, removing barriers while creating enabling conditions for excellence in frontline care delivery.

Integrated governance models establish unified oversight for MCH services that have traditionally operated as separate programmatic streams. These models create coordinated authority structures, aligned decision-making processes, and coherent accountability systems spanning the maternal-child continuum (Albejaidi

& Katz, 2020). Implementation approaches include developing integrated MCH service units with consolidated leadership, establishing coordinating councils with representation from different service components, creating unified policies spanning traditionally separate programs, and implementing integrated performance review processes examining maternal and child health services holistically rather than as discrete elements.

Policy alignment initiatives systematically review and harmonize diverse policies affecting MCH services to ensure coherence and complementarity rather than fragmentation or contradiction. This approach identifies policy gaps, conflicts, or inconsistencies affecting service implementation and develops coordinated frameworks supporting integrated care delivery (Ministry of Health, 2021). Practical application includes conducting policy inventories documenting all directives affecting MCH services, analyzing policy interactions and potential conflicts, developing consolidated policy statements addressing related service elements cohesively, and creating simplified implementation guidance translating complex policy requirements into practical operation instructions.

Resource allocation reforms enhance both adequacy and alignment of resources supporting MCH services. These approaches modify budgeting processes, staffing models, supply management systems, and infrastructure investments to ensure appropriate resources for comprehensive maternal and child healthcare (Al-Hanawi et al., 2018). Implementation strategies include developing MCH-specific resource planning methodologies, establishing protected funding streams for essential maternal and child health services, implementing needs-based allocation formulas addressing population characteristics and geographical factors, and creating flexible resource deployment mechanisms allowing adaptation to emerging service priorities.

Performance accountability systems establish clear responsibility for MCH outcomes while providing meaningful consequences linked to performance achievements. These approaches define expected results, measure actual performance, provide performance feedback, and implement appropriate recognition or improvement expectations based on observed outcomes (Almalki et al., 2021). Effective implementation includes developing balanced accountability frameworks addressing both process and outcome measures, establishing clear lines of responsibility for different performance dimensions, creating regular performance review processes with actionable feedback, and implementing graduated response systems proportionate to observed performance patterns.

Coordination mechanisms enhance alignment between PHC-based MCH services and related functions operated by hospitals, specialized centers, and community organizations. These approaches establish structured communication channels, referral procedures, information sharing protocols, and collaborative planning processes that span organizational boundaries (Al-Yousuf et al., 2018). Implementation strategies include developing formal service agreements between complementary providers, establishing liaison roles facilitating cross-organization coordination, creating shared case management processes for complex situations requiring multiple provider involvement, and implementing communication platforms supporting real-time information exchange across organizational boundaries.

Information system enhancements address technology infrastructure supporting MCH service delivery, management, and improvement. These approaches develop integrated digital capabilities providing efficient documentation, clinical decision support, performance monitoring, and communication functions specifically adapted to maternal and child health requirements (Ministry of Health, 2021). Implementation includes enhancing electronic health records with MCH-specific modules, developing interoperability solutions connecting PHC systems with hospital and specialty care platforms, implementing analytical capabilities supporting population health management for maternal and child populations, and creating user-friendly interfaces facilitating efficient documentation while maintaining family engagement during clinical encounters.

Recommended administrative system enhancements include:

1.   Implement integrated MCH service units within PHCs, with unified leadership, consolidated budgeting, coordinated scheduling, and collective accountability for comprehensive maternal and child health outcomes.

2.   Develop consolidated policy frameworks addressing the maternal-child continuum cohesively, replacing separate program directives with integrated guidance supporting coordinated service delivery.

3.   Establish needs-based resource allocation methodologies for MCH services, incorporating population characteristics, geographical factors, and service complexity into distribution formulas to enhance resource equity.

4.   Implement balanced accountability systems for MCH services, with meaningful measurement across multiple performance dimensions, clear responsibility assignment, regular review processes, and appropriate response mechanisms.

5.   Create formal coordination mechanisms connecting PHC-based MCH services with hospitals, specialty centers, and community organizations, including service agreements, liaison roles, referral protocols, and information sharing systems.

6.   Enhance information systems supporting MCH services with integrated documentation templates, family-centered views, clinical decision support, performance dashboards, and interoperability solutions connecting different care settings.

7.   Develop administrative capacity building programs specifically preparing PHC leaders for effective management of MCH services, addressing strategic planning, quality oversight, resource optimization, team development, and performance improvement skills.

8.   Implement community governance mechanisms including family advisory councils, community representation on planning committees, and structured processes for incorporating community input into MCH service design and evaluation.

6.5 Community Engagement Innovations

Community engagement innovations enhance connections between PHC-based MCH services and the populations they serve, creating partnerships that improve service responsiveness, utilization, and effectiveness. These approaches recognize families and communities as essential partners rather than passive service recipients, developing collaborative relationships that strengthen both clinical care quality and broader health promotion efforts. Effective engagement innovations address both facility-based partnerships with individual families and broader community-level collaboration addressing population health priorities.

Family partnership models establish collaborative relationships between healthcare providers and families receiving MCH services. These models move beyond traditional provider-directed approaches to create genuine partnerships characterized by shared information, mutual respect, collaborative decision-making, and collective responsibility for health outcomes (Ministry of Health, 2021). Implementation approaches include developing family-centered care standards defining partnership expectations, implementing shared decision-making tools supporting collaborative care planning, creating family education approaches emphasizing capability development rather than compliance, and establishing documentation systems capturing family perspectives and priorities alongside professional assessments.

Community advisory mechanisms create structured opportunities for community representatives to influence MCH service planning, implementation, and evaluation. These approaches establish formal channels for community input regarding service priorities, design features, accessibility considerations, and quality expectations (Aldossary et al., 2020). Practical implementation includes forming community advisory councils with diverse representation from the served population, conducting regular community forums addressing MCH service issues, creating structured processes for incorporating community

recommendations into service planning, and providing feedback to community representatives regarding actions taken based on their input.

Outreach initiatives extend MCH services beyond facility walls to reach underserved populations and address barriers limiting service utilization. These approaches include home visiting programs for vulnerable families, mobile service delivery reaching remote communities, school-based health initiatives, and targeted outreach to specific populations with unique health needs or access challenges (Al-Yousuf et al., 2018). Implementation strategies include developing standardized outreach protocols defining service components suitable for community delivery, establishing specialized outreach teams with appropriate training and equipment, creating documentation systems maintaining information continuity between facility and community contexts, and implementing safety and quality assurance mechanisms specific to non-facility environments.

Community health promotion collaborations engage community partners in addressing broader determinants of maternal and child health beyond clinical services. These collaborative approaches work with schools, religious institutions, employers, media outlets, and community organizations to create environments supporting healthy development and positive health behaviors (Almalki et al., 2021). Implementation includes conducting community asset mapping to identify potential partners, developing collaborative health promotion campaigns addressing priority MCH issues, creating shared educational resources adapted for different community settings, and establishing coordination mechanisms ensuring consistent messaging across different promotion channels.

Digital engagement strategies utilize technology to extend reach, enhance accessibility, and maintain connections with families between traditional service encounters. These approaches employ websites, mobile applications, text messaging systems, social media platforms, and virtual visit capabilities to provide information, support, reminders, and limited services through digital channels (Ministry of Health, 2021). Effective implementation includes developing content specifically designed for digital delivery, ensuring cultural and linguistic appropriateness for target populations, creating user-friendly interfaces accessible to people with different technology capabilities, and implementing appropriate privacy protections for health information shared through digital platforms.

Peer support programs engage community members with relevant lived experience to provide supplemental support to families receiving MCH services. These approaches include parent mentoring programs, breastfeeding support networks, developmental play groups, and new parent classes facilitated by trained community members (Aldossary et al., 2020). Implementation strategies include developing structured training curricula preparing peer supporters for their roles, establishing supervision systems ensuring quality and appropriate boundaries, creating referral processes connecting families with relevant peer support options, and implementing evaluation approaches assessing both participant experience and health outcomes associated with peer support interventions.

Recommended community engagement innovations include:

1.   Implement family partnership models establishing collaborative relationships between providers and families receiving MCH services, with shared decision-making tools, family-centered documentation, and partnership standards defining mutual expectations.

2.   Establish community advisory councils providing structured input on MCH service planning, design, and evaluation, with diverse community representation, regular meeting schedules, and defined processes for incorporating recommendations.

3.   Develop targeted outreach initiatives extending MCH services beyond facility walls, including home visiting programs for vulnerable families, mobile service delivery for remote communities, and school-based health initiatives.

4.   Create collaborative health promotion campaigns addressing priority MCH issues, engaging schools, religious institutions, employers, and community organizations as partners in promoting positive health behaviors and supportive environments.

5.   Implement digital engagement strategies utilizing websites, mobile applications, and social media platforms to provide information, support, and limited services through channels accessible between traditional visits.

6.   Establish peer support programs engaging trained community members to provide supplemental support to families receiving MCH services, including parent mentoring initiatives, breastfeeding support networks, and developmental play groups.

7.   Develop community health worker programs recruiting and training local individuals to serve as bridges between health services and communities, providing basic health education, assistance navigating services, and cultural mediation.

8.   Create community-based monitoring approaches engaging community members in tracking MCH service quality, accessibility, and responsiveness, providing feedback directly to service providers and administrators.

7. Conclusion

This comprehensive analysis of administrative frameworks and nursing implementation for maternal and child health services in Saudi primary healthcare centers reveals both significant progress and persistent challenges requiring attention. The Kingdom has established foundational structures for MCH service delivery, developed essential clinical protocols, implemented supporting information systems, and invested in workforce development. However, substantial opportunities remain for enhancing service integration, strengthening quality monitoring, optimizing resource allocation, developing specialized nursing capabilities, and engaging communities more effectively in service planning and delivery.

The recommended improvement framework addresses these opportunities through complementary interventions targeting administrative systems, nursing practice, service delivery models, quality approaches, and community engagement. By simultaneously addressing these interconnected dimensions, the framework provides a comprehensive roadmap for advancing MCH services within the evolving Saudi healthcare landscape. Key priorities include developing integrated service pathways spanning the maternal-child continuum, implementing competency-based professional development systems, establishing structured mentorship programs, enhancing interprofessional collaboration through formal coordination mechanisms, strengthening community engagement initiatives, and implementing comprehensive quality monitoring systems.

Several overarching themes emerge from this analysis with important implications for future development. First, effectively integrating traditionally separate service components represents a critical priority for enhancing both efficiency and effectiveness of MCH services. Second, developing specialized nursing capabilities through targeted education, mentorship, and role development offers substantial potential for expanding service capacity and quality. Third, strengthening quality monitoring and improvement systems provides essential infrastructure for continuous enhancement rather than episodic change initiatives. Fourth, meaningful community engagement represents an underutilized resource for making services more responsive to family needs and preferences.

Implementation of these recommendations should be approached strategically, recognizing both the ambitious nature of comprehensive improvement and the practical constraints affecting Saudi PHCs. Phased implementation focusing initially on high-impact changes with feasible resource requirements will build momentum while demonstrating value. Pilot implementations in selected facilities can refine approaches before broader dissemination, while knowledge-sharing networks can accelerate learning across different implementation sites. Throughout this process, systematic evaluation using balanced

measurement approaches will provide essential feedback regarding which interventions produce meaningful improvements in specific contexts.

The ongoing transformation of Saudi healthcare under Vision 2030 creates both opportunities and imperatives for enhancing MCH services within primary healthcare. By addressing the interconnected administrative and nursing dimensions examined in this analysis, Saudi PHCs can significantly advance maternal and child health service quality, accessibility, and effectiveness. These improvements will contribute not only to immediate health outcomes for current mothers and children but also to longer-term population health development through the far-reaching impacts of early life healthcare experiences. This dual impact makes enhancing MCH services a particularly valuable investment in the Kingdom's health and development priorities.

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