

SYSTEMATIC REVIEW

Determinants of interprofessional collaboration in implementing Basic Emergency Obstetric and Neonatal Care (BEmONC) services

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| Article Info | ABSTRACT |
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| Received Mar 15, 2024 Revised Sep 12, 2024 Accepted Sep 20, 2024 Published Apr 1, 2025 *Corresponding author: Yuninda Loviana Ersianti lovianayuninda@gmail.com Keywords: BEmONC Interprofessional collaboration Referral Primary healthcare Maternal health | Objective: Maternal and infant mortality is a global challenge due to limited healthcare access. The WHO's BEmONC program in Indonesia aims to reduce MMR and IMR, but its effectiveness is suboptimal due to service-related issues. This study identified factors affecting essential obstetric and neonatal service implementation in primary healthcare facilities. Materials and Methods: A literature review was conducted using a descriptive analysis approach, supported by Mendeley and Biblioshiny in R-Studio. Sixteen peer-reviewed articles were selected from four online databases, based on predefined inclusion criteria. Results: The study identified three critical domains for improving and evaluating the performance of BEmONC teams. These domains include optimizing team efficacy through factors such as healthcare personnel, infrastructure, collaboration, and targeted training. Furthermore, effective BEmONC management is essential, encompassing policy formulation, communication strategies, operational improvements, and robust leadership. Lastly, evaluating the implementation of BEmONC requires consideration of factors such as self-efficacy, healthcare workforce capacity, and societal trust, confidence, and recognition. Key contributors to the success of BEmONC include efficient collaboration, streamlined administration, and focused evaluation. Enhancing maternal and newborn health service delivery can be achieved by addressing infrastructure deficiencies, improving healthcare worker performance, and fostering community trust. Conclusion: Effective teamwork, robust management, and community confidence are pivotal in improving maternal and newborn health outcomes within BEmONC services. |

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Highlights:

1. BEmONC has been proven to diminish both newborn and mother death rates and morbidity.
2. The study identified three main areas for improving and assessing the determinants of interprofessional collaboration (IPC) in the implementation of BEmONC services: team performance, management, and BEmONC evaluation.



INTRODUCTION

Maternal and child health services are critical indicators of a nation's development, necessitating government focus.¹ In resource-constrained settings, up to 94% of maternal deaths result from postpartum hemorrhage, infection, and pre-eclampsia, while neonatal deaths are primarily attributed to birth asphyxia, preterm delivery complications, and sepsis.² The Sustainable Development Goals aim to reduce maternal mortality to below 70 deaths per 100,000 live births between 2015 and 2030, requiring enhanced access to antenatal care services.³

Elevated maternal mortality ratios stem from inadequate access to high-quality healthcare and delays in care due to delayed recognition of danger signs and decision-making processes.¹ Additional factors impacting intrapartum care in developing nations include deficient health infrastructure, limited collaboration among healthcare teams, ineffective patient communication, and suboptimal referral systems for obstetric emergencies.² The World Health Organization (WHO) introduced a global policy to reduce maternal and infant mortality rates through the Basic Emergency Obstetric and Neonatal Care (BEmONC) program.⁴ In Indonesia, interprofessional collaboration (IPC) has been implemented to enhance the quality of healthcare services, effectively reducing MMR and IMR.⁵

Basic Emergency Obstetric and Neonatal Care, known in Indonesia as *Pelayanan Obstetri dan Neonatal Darurat Dasar*, provides 24-hour emergency services at primary care facilities, such as *puskesmas*.⁵ BEmONC encompasses treatment and referral for: 1) asphyxia; 2) infant feeding issues, low birth weight, jaundice, hyperbilirubinemia, hypoglycemia, hypothermia; 3) postpartum hemorrhage; 4) puerperal infection; 5) shoulder dystocia and vacuum extraction; 6) hypertensive disorders in pregnancy; 7) infants with respiratory distress; 8) infants with seizures; 9) infants with infections; 10) general preparation; 11) pregnancy monitoring.¹

For optimal healthcare delivery, each district/city should maintain at least four BEmONC-capable *puskesmas* and Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) services in hospitals for referrals. Collaboration with advanced referral healthcare facilities significantly reduces maternal mortality and morbidity.⁶ Understanding factors associated with interprofessional collaboration in BEmONC may enhance knowledge on designing effective community programs to improve health service quality and reduce maternal and neonatal mortality. This study aimed to investigate factors associated with interprofessional

collaboration in the implementation of BEmONC services.

MATERIALS AND METHODS

This study utilized a systematic literature review design, adhering to the PRISMA checklist through sequential stages of identification, screening, eligibility, and inclusion. A systematic literature review methodically collects and critically evaluates core findings from prior research and expert-authored texts within the primary manuscript. This approach elucidates sources of knowledge advancement and policy development, stimulates innovative concepts, and serves as a guiding framework for subsequent investigations in a specific domain. A descriptive analysis approach was employed to delineate factual aspects of a phenomenon without hypothesis testing.⁷ Sixteen articles were selected following a rigorous screening process, employing keywords including “Interprofessional,” “Collaborative,” “Emergency,” “Obstetric,” “Neonatal Care,” and “Primary Health Care” across four databases: Google Scholar, Science Direct, SINTA, and EBSCO. Boolean operators, such as AND, were strategically applied to refine search queries (e.g., “Interprofessional Collaborative AND Emergency Obstetric AND Neonatal Care AND Primary Health Care”). Duplicate articles were removed using Mendeley software. Furthermore, keywords, titles, and abstracts pertinent to the study’s objectives were meticulously assessed to ensure relevance. Data analysis was performed using Biblioshiny in R-Studio, generating a comprehensive overview of key articles, authors, journals, institutions, and countries, while also mapping the co-occurrence network among the selected publications to highlight interconnections.

Inclusion criteria for article selection were: 1) Original research studies, excluding literature reviews; 2) Articles fully accessible and not sourced from repositories; 3) Studies utilizing quantitative or qualitative methodologies; 4) Articles published within the decade spanning 2013 to 2023. Exclusion criteria comprised: 1) Articles published prior to 2013; 2) Articles in the form of books, theses, or reviews; 3) Articles lacking full-text access; and 4) Articles addressing interprofessional collaboration but not specifically related to BEmONC. To structure the review’s focus and search strategy, the PEO framework (Population, Exposure, Outcome, and study design) was employed. The PEO framework (Table 1) and a flowchart (Figure 1) illustrate the systematic process of literature search and selection undertaken in this study, ensuring methodological rigor and transparency..

Table 1. PEOs Framework

| P (Population) | E (Exposure) | O (Outcome) | S (Study Design) |
|--|---------------------------------|-----------------------|--|
| All individuals involved with BEmONC, including healthcare providers (doctors, midwives, nurses, and other health workers), were included. | Interprofessional collaboration | BEmONC implementation | All publications original research regarding interventions in Interprofessional Collaboration concerning the implementation of BEmONC (Basic Obstetric and Neonatal Emergency Care) were reviewed. |

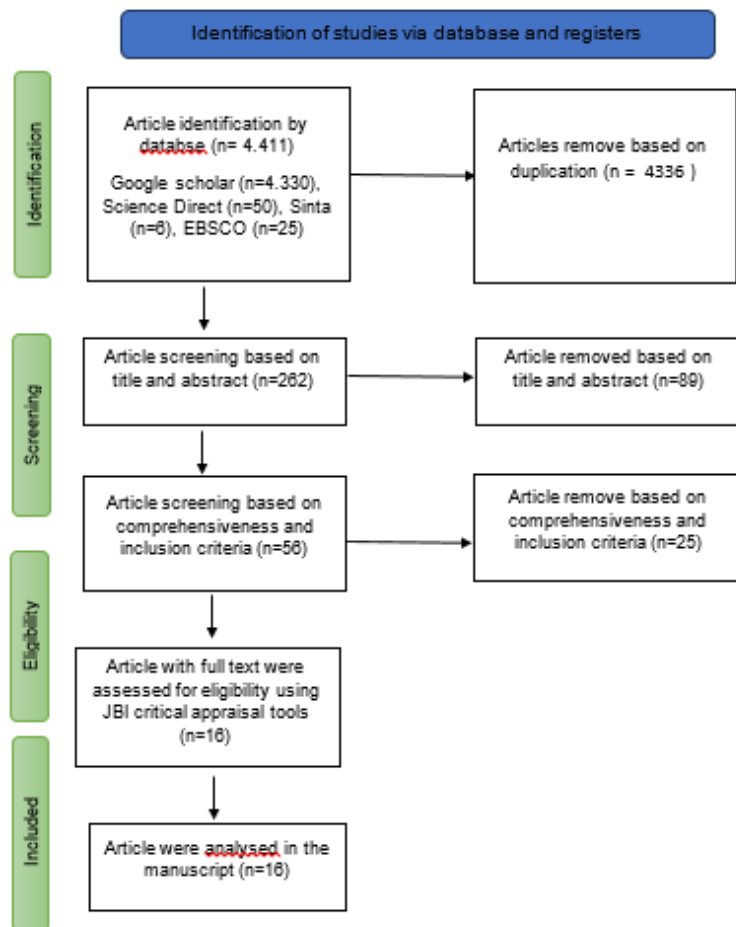


Figure 1. Prisma flow-chart

RESULTS AND DISCUSSION

Articles fulfilling the inclusion criteria were extracted, categorized, and summarized based on journal bibliography, population, intervention, comparison,

results, outcomes, and study duration. These articles were subsequently synthesized into tabular format, encompassing article titles, findings, study designs, methodologies, and outcomes. The 16 selected articles have been synthesized, as presented in [Table 2](#).

Table 2. Synthesized data of the article reviews

| No | Authors | Outcome | Research design and method | Result |
|----|---------------------|--|---|--|
| 1. | Zhong et al., 2021 | Participants get better performance in both teams and individually, as well as increased confidence to handle emergencies in the future. ² | In South India, a qualitative descriptive study was conducted with 125 health workers, including medical and nursing staff and other health workers, using pre and post-workshops. Workshop one-Simulation approach using realistic scenarios and simulation. ² | Participants highlighted patient relationships, support from other health professionals, perceived gaps in knowledge and experience, and a lack of resources as variables influencing their experience with obstetric emergencies. Participants' learning centered on increasing team and individual performance, as well as gaining confidence in dealing with future emergencies. ² |
| 2. | Susanti et al. 2019 | Evaluate the implementation of BEmONC at <i>Puskesmas Bangetayu Semarang</i> and identify factors that promote and hinder the success of the program. ¹ | Descriptive qualitative research using interviews with informants selected using purposive sampling technique. Informants included representatives from the Semarang City Health Office, Bangetayu Community Health Centre (<i>Puskesmas Bangetayu</i>), and the program's target communities. ¹ | Studies show that implementation of BEmONC is less effective. This is due to the lack of health resources in terms of quantity and quality. In addition, health workers did not receive BEmONC training. This was exacerbated by inadequate facilities and infrastructure. BEmONC implementation is influenced by the communication process between organizations and the community's socialization process, both of which are not ideal. ¹ |
| 3. | Haider et al., 2019 | To improve maternal and neonatal care in Bahawalnagar district, barriers to the provision of emergency obstetric and neonatal services should be removed. ³ | A sequential exploratory mixed methods design study in Pakistan. Participant interviews were used to acquire qualitative data, which was guided by key informants. Quantitative data were acquired from the same subjects through a rank-order survey. In the Bahawalnagar district's primary health unit, 79 healthcare professionals provided 24-hour BEmONC services. ³ | Interpersonal challenges include a lack of teamwork, dispute resolution, communication, and an imbalance of power. Job instability, a lack of organizational culture, challenges with human resource placement, and a lack of role clarity are all significant organizational impediments. At the system level, important challenges included a lack of target management, a lack of resource availability, homework requirements, and difficulty with dual practice. ³ |
| 4. | Edward et al., 2019 | Research will assist in a uniform continuing professional development program to assure its relevance and integrity, and to catalyze the ongoing development of interprofessional education programs, independent of organizational size or location. ⁸ | A mixed-method study with 114 participants from Australia. The survey consisted of sixty (60) questions, and although the majority of the questions were closed, three (3) asked respondents to make further remarks, and twenty-five (25) questions had an 'Other (Please specify)' option. The open-ended questions in this poll provide qualitative data. ⁸ | The results showed an association between special education departments (DEDs) and the quality of maternal care offered. ⁸ |
| 5. | Kumar et al. 2021 | The training applied to their daily practice, and their eagerness to learn how to handle complex births demonstrated the ongoing importance of obstetric and neonatal emergency simulation training. ⁴ | A semi-structured one-on-one interview strategy was utilized in this qualitative study conducted in India. All doctors, midwives, nurses, and health workers who participated in the ONE-Sim program, N=48. ⁴ | The interviews revealed five themes: comparing simulation to clinical practice, learning and working in teams, thinking retention and sustainability, integrating Simulation-Based Education into the role, and managing leadership. ⁴ |
| 6. | Kost et al., 2019 | Nurses, midwives and doctors on duty were given the opportunity to train in two significant obstetric crises in a realistic simulated environment that matched the actual situation. ⁹ | Pre and post simulation quantitative research study in Philadelphia. This quality improvement intervention adopted a blended curriculum approach, widely used in simulation research and proven superior to traditional in-service training. The program involved 30 registered nurses (75% of the unit's nurses) and 13 obstetric clinicians (59% of | The objectives of this assignment are: The objectives of this assignment are: 1) to enhance the team's perception of environmental safety in patient care, 2) to improve the effectiveness of team collaboration in managing obstetric crisis events, 3) to improve compliance with the best practice list for addressing postpartum haemorrhage (PPH) and shoulder |

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|----|------------------------------|--|--|--|
| | | obstetricians or nurse midwives). ⁹ | dystocia (SD) occurrences, 4) to enhance the self-efficacy of obstetric personnel in managing obstetric crisis events, 5) address any potential system or process affecting patient care, 6) Use simulation training to improve obstetric staff satisfaction, and 7) Increase the effectiveness of post-simulation briefings. ⁹ | |
| 7. | Berg et al., 2023 | The utilization of a structured model of process-oriented group reflection for healthcare practitioners on labor and birth care proved to be a crucial part of the training intervention, as it supplemented the information gained through theory- and simulation-based education. The three-pillar training intervention enhances care routines that promote healthy birth and the management of problems. ¹⁰ | Qualitative research in Congo with an interview approach by 131 health care providers. ¹⁰ | Group reflection contributes valuable information to the other components of the three-pillar training intervention. Sharing and analysing care circumstances helps healthcare personnel build self-awareness, tools for implementing regulated and safe care routines, and teamwork. ¹⁰ |
| 8. | Mselle et al., 2023 | Investigate how health professionals, management, and communities viewed the introduction of a comprehensive obstetric and neonatal emergency training program in rural Tanzania. ¹¹ | Qualitative research design with FGDs in five (5) healthcare facilities In rural Tanzania, enrolling in a thorough emergency obstetric and neonatal training program Twenty-four (24) focus group discussions comprising health management board teams, health facility managers, staff receiving training, and community members. ¹¹ | Participants discussed the acquisition of skills required for quality and safe obstetric and neonatal care. The study revealed five themes: 1) Competent and confident health teams, 2) Increased commitment to teamwork, 3) Community trust and confidence in the health team, 4) Mentoring as a vital success factor, and 5) Improved training and practice. These five emerging themes reflect greater community confidence and trust, as well as better health-care team competency in supporting mothers during pregnancy and labor at the health center. ¹¹ |
| 9. | Kumar et al., 2019 | The provision of BEmONC and CEmONC services in Pakistan continues to pose a significant challenge, particularly in light of the substantial burden of maternal and neonatal mortality. The objective of the study was to evaluate the accessibility of emergency obstetric and newborn care within Sindh Province, Pakistan. ¹² | A cross-sectional study of 12 districts selected in Sindh Province, Pakistan for their child and maternal health considerations. Data were collected from 63 public sector health facilities, including district-level hospitals, Taluka (sub-district) central hospitals, and rural health clinics. BEmONC and CEmONC services were evaluated via direct observation and interviews with facility directors, managers, and employees. ¹² | BEmONC is available but does not meet WHO requirements. Seven components of basic emergency obstetric and neonatal services revealed that 92% of health facilities had parenteral antibiotics, 90% had oxytocin, 92% had manual placenta services, 87% had staff capable of removing the remaining products of conception, 82% had normal birth facilities, and 80% had neonatal resuscitation services available. ¹² |
| 10 | Tria et al., 2019 | The dominant variable that has a relationship to referral requirements and preparation with standard operating procedures. ¹³ | Quantitative analytic study with survey method in Aceh, Indonesia with BEmONC teams from 18 health centers totaling 72 people (total sampling). ¹³ | SOPs in preparation and referral requirements have not been met and feedback from CEmONC-BEmONC is difficult to work with. Staff lack BEmONC standards and training. There is also no referral infrastructure. Insufficient facilities are available in the ambulance. Communication between BEmONC-CEmONC is one-way, SOPs are incomplete and placement of SOPs is not ergonomic so they are not easily seen by health workers. ¹³ |
| 11 | Sulistyaningsih et al., 2022 | Other studies show evidence that Interprofessional teamwork can boost health-care quality and reduce medical errors. The goal of this project is to create a | Qualitative design with single case study with holistic case design in Bantul, Yogyakarta, Indonesia. Researchers collected data by observation followed by in-depth | The study identified four themes: work culture mechanisms, environmental mechanisms, practices in interprofessional collaboration, and institutional support mechanisms. |

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|----|--------------------------|---|--|--|
| | | model of BEmONC Inter-professional Collaboration Practice (ICP) at health centers. ⁵ | interviews and then ending with documentation. The informants were 19 members of BEmONC. Supporting informants were two patients and their families ⁵ | These mechanisms are interrelated, influencing the effectiveness of interprofessional collaboration and the quality of BEmONC. ⁵ |
| 12 | Ernawati et al., 2023 | The implementation of BEmONC <i>puskesmas</i> has not been optimal, as evidenced by the MMR, IMR, and under-five mortality rate. Support from the local government and related parties is needed with the hope of being able to meet resource needs in the context of organizing BEmONC primary health facilities. ⁶ | Qualitative research using a descriptive approach. In the Solok district of Indonesia, data was collected through interviews, document analysis, and observation. A total of 7 informants, including the field manager, MCH manager, program subdivision, 4 BEmONC <i>puskesmas</i> . ⁶ | The implementation of BEmONC capable health centers has not been optimal due to the unavailability of resources, infrastructure, equipment, medicines and provision of BEmONC team. In addition, the process of commitment, communication, and community interaction among stakeholders has not been optimized. The implementation of the BEmONC program requires coordination with local government support through awareness of budget determination, coordination as well as involvement between stakeholders in the hospital environment, professional associations, NGOs, local communities and CEmONC as a unified referral system. ⁶ |
| 13 | Yamuragiye et al., 2023 | To optimize MCH, policymakers, professional health educators, and clinicians must identify measures for improving interprofessional interactions and contributing to the quality of obstetric and neonatal care. ¹⁴ | A semi-structured interview was used to perform a descriptive qualitative study at five Northern Rwanda public hospitals. The study included 25 health workers, including nurses, midwives, doctors, and non-physician anaesthetists who worked in maternity wards. ¹⁴ | Some of the benefits of effective interprofessional collaboration include reducing child and maternal mortality and morbidity, and optimizing quality care. However, there are challenges related to communication and competition in interprofessional collaboration, stressful work environment and lack of resources. ¹⁴ |
| 14 | Cornthwaite et al., 2013 | The primary objective of the training is to enhance maternity care. Therefore, participants should receive positive feedback, but formal assessment should be avoided. However, monitoring outcomes is still essential to ensure the safety and quality of care. It is essential to remember that the training's effectiveness should be assessed by the safety of both mothers and babies, not only exam scores. ¹⁵ | Quantitative research study with a pre and post training experimental approach in the UK with practical midwifery multiprofessional respondents. ¹⁵ | This study recommends formal evaluation of training programs with a focus on clinical needs and outcomes, rather than participants' exam scores. Research highlights the importance of good team communication and coordination to reduce risks to mothers and babies. The analysis revealed variations in team management. Optimal teamwork is defined as effective action toward a common goal. Effective leadership is developed through internal and evidence-based training, as well as clinical practice. Simulation, inter-professional training, and leadership training are essential for enhancing teamwork and leadership in labor emergencies. This can be achieved by focusing on situation awareness, structured communication, and evidence-based learning. ¹⁵ |
| 15 | Walker et al., 2015 | PRONTO training was effective in strengthening obstetric and neonatal care professionals' knowledge and confidence, resulting in improved clinical practice. ¹⁶ | Quantitative study with pre and post-test simulation training in obstetric and neonatal care providers in 15 clinics in the country of Guatemala. ¹⁶ | Knowledge and self-efficacy scores rose significantly across all instructional areas. At the end of the program, scores were connected across all topics. More than 60% of the objectives established for improving clinic function and emergency treatment were met. No predictors of goal achievement were found. These positive results confirm the positive impact of PRONTO training in the context of neonatal and obstetric care in a limited-resource |

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|----|----------------------|---|--|--|
| 16 | Tanjung et al., 2016 | The study evaluated the implementation of the BEmONC Program at <i>Puskesmas</i> Tegal with a focus on context, input, process, and product (CIPP). ¹⁷ | A qualitative study using in-depth interviews, observation, and document review in Indonesia. A total of 10 key informants were selected for this study, including the head of <i>Puskesmas</i> , the head of the Family Health and Nutrition Division of the Tegal Regency Health Office, the midwife in charge of the BEmONC operation, and mothers with severe pre-eclampsia. ¹⁷ | environment. ¹⁶ The results of the evaluation showed that BEMONC in Tegal Health Center managed to implement the program well, although there are still some areas that need to be improved, such as nurse involvement, resource allocation, and some constraining factors. The evaluation results showed that the number of health workers was deemed adequate, yet nurses were not entirely involved (context). In addition, there is no specific funding for the operation of the BEMONC health center. Training for emergency services and efforts to improve facilities were well implemented (input). BEMONC services and health workers are performing well (process). Intersectoral cooperation is working well. Constraining factors include the slow processing of BPJS claims and low public awareness. The results show a high level of patient satisfaction with BEMONC services (product). ¹⁷ |
|----|----------------------|---|--|--|

Table 3. Country distribution of the articles

| Countries | Freq. | Countries | Freq. |
|-----------|-------|-------------------|-------|
| Australia | 1 | England | 1 |
| Congo | 1 | Pakistan | 2 |
| Guatemala | 1 | Philadelphia (US) | 1 |
| India | 2 | Rwanda | 1 |
| Indonesia | 5 | Tanzania | 1 |

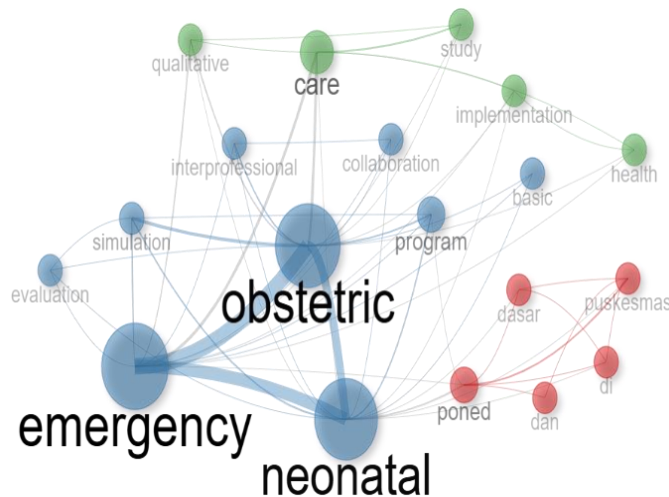


Figure 2. Co-occurrence network of the articles

Table 4. Articles' summary

| No | Theme | Subject matter |
|----|-------------------------------------|--|
| A | Team Performance of BEmONC | a. Health workers [2, 3, 9, 13] b. Infrastructure [2 and 10] c. Teamwork [1, 3, 5, 6, 8, 11, and 16] d. Appropriate training [1, 5, 6, 7, and 8] |
| B | BEmONC management | a. BEmONC implementation policy [10 and 12] b. Professional and community communication [2, 10, 12, and 13] c. Fixed management issues [3,6, and 11] d. Leadership [5] e. Support and assistance from the BEMONC team [4, 8, 11, and 12] |
| C | Evaluation of BEmONC Implementation | a. Self-efficacy of health workers [1, 6, 8, and 15] b. Public satisfaction, confidence and trust in health workers [6, 8, and 14] |

Characteristics

A total of 16 articles were identified based on the search results and alignment with the research keywords. The review included studies conducted in both developed and developing countries. The developing countries represented in the articles include India, Indonesia, Pakistan, the Democratic Republic of the Congo, and Tanzania. Articles from developed countries were conducted in Australia, the United Kingdom, Guatemala, Philadelphia (USA), and Northern Rwanda (Africa). The countries featured in these articles served as the primary research settings.

This review explores interprofessional collaboration in BEmONC services within healthcare facilities. The primary focus of the reviewed articles includes team performance, management practices, and the evaluation of BEmONC implementation. The selected studies comprised original research employing qualitative,^{1,2,5,7,8,11,12,13,16} quantitative,^{6,9,10,14,15} and mixed-methods^{3,4} research designs.

Thematic analysis

According to the Indonesian Ministry of Health (2016), BEmONC has been shown to significantly reduce both maternal and neonatal mortality and morbidity.⁶ The article review identified multiple variables influencing the effectiveness of BEmONC services, which were grouped into key themes and subtopics, as presented in [Table 4](#).

To ensure the quality of care, referral implementation must be executed with adequate and timely preparation to promote service delivery that is both effective and efficient. A major barrier to referral system functionality is the shortage of trained personnel and the absence of blood transfusion units across all districts. Critical success factors for effective referrals include healthcare personnel, transportation availability, interprofessional teamwork, facility readiness, standard operating

procedures, and communication. Strengthening the healthcare referral system is essential to address existing challenges in BEmONC services, particularly in facilitating timely referrals from *puskesmas* to hospitals.¹³

Team Performance of BEmONC

Health workers

Research indicates that the availability of resources plays a pivotal role in effectively managing obstetric and neonatal emergencies.² Resource-related barriers are predominantly experienced at the organizational level, encompassing issues such as the absence of a supportive organizational culture, unclear role delineation, ineffective human resource allocation, and job insecurity.³ The quality of healthcare services and supporting infrastructure contributes to overall service quality in both independent and combined capacities. Setyawan asserts that the standard of healthcare delivery is directly influenced by the quality of human resources, supporting facilities, and infrastructure.¹⁸

Infrastructure

Several reviewed articles reported that certain BEmONC facilities were operating with inadequate infrastructure and insufficient resources.^{2,10} Conversely, the adequacy of healthcare facilities and infrastructure significantly determines access to health services.¹⁹ The presence of well-equipped facilities, adherence to referral standard operating procedures, the availability of competent personnel, established communication networks between BEmONC health centers and CEmONC hospitals, and compliance with referral requirements and preparatory standards all contribute to the delivery of accurate, timely, safe, and optimal referrals. These conditions ultimately enhance the management of maternal and neonatal emergency cases.¹³



Teamwork

A study conducted at the Tegal Community Health Center in 2017¹⁶ found that nurses were not fully engaged within the BEmONC team, which typically comprises physicians, nurses, and midwives who collaborate in addressing obstetric and neonatal emergencies at the primary care level.¹⁷

Interprofessional teamwork is critical to the successful implementation of BEmONC services at puskesmas.^{1,3,5,6,8,11} Evidence suggests that the effectiveness of health services is closely linked to health workers' job satisfaction and their capacity for teamwork.²⁰ To enhance service quality, it is essential to conduct biannual evaluations and prioritize patient satisfaction through targeted training and team-based collaboration.²¹

Relevant training

According to Bloom's taxonomy, behavior is shaped by the integration of knowledge, skills, and attitudes. Human knowledge is classified into six cognitive levels: knowledge, comprehension, application, analysis, synthesis, and evaluation.^{22,23} Evidence suggests that training in Normal Childbirth Care (Asuhan Persalinan Normal or APN) significantly influences midwives' behavioral outcomes.²² To deliver evidence-based care in obstetric and neonatal emergencies, it is essential to enhance competencies across knowledge, perception, practical skills, and clinical experience.^{1,5-8} The BEmONC simulation-based training is designed to enable healthcare professionals to critically reflect on their clinical practice by comparing simulated scenarios with real-life situations. This training promotes collaborative learning and team functioning, improves retention and sustainability, bridges contextual relevance and professional roles, and strengthens leadership capacities.¹²

BEmONC management

BEmONC implementation policy

Research conducted on BEmONC-designated health centers in the Solok District Health Office area revealed inadequacies in policy execution. The local health authority holds the responsibility for implementing BEmONC-related policies, including the designation of capable facilities and ensuring the availability of essential resources such as infrastructure, trained teams, medications, equipment, and medical supplies.⁶ Tria et al.'s review highlighted that referral protocols and preparatory requirements remain insufficient.¹³ Furthermore, communication from CEmONC hospitals

back to BEmONC-level *puskesmas* is problematic, often functioning in a one-directional manner. Standard operating procedures (SOPs) are reported to be incomplete and poorly placed in non-ergonomic locations, thereby reducing visibility and accessibility for health personnel.

Professional and community communication

Studies indicate that the communication between BEmONC and CEmONC levels is inadequately supportive.¹³ Other studies also demonstrate that stakeholder engagement, community involvement, and program socialization are not optimally executed. Successful BEmONC implementation requires co-ordinated efforts supported by budgetary planning, active collaboration among local government bodies, hospital-based stakeholders, professional associations, non-governmental organizations (NGOs), local communities, and the critical involvement of CEmONC hospitals as part of an integrated referral framework.⁶

Persistent management issues

Implementation of the BEmONC program continues to encounter managerial challenges, particularly in areas such as conflict resolution and unequal distribution of authority. There is a clear need to apply core management functions to foster an effective work culture and build responsive organizational systems. Health center-level management practices typically involve a phased approach: initial systematic planning (P1), followed by mobilization and execution of managerial operations (P2), and concluding with continuous monitoring, program supervision, and evaluation (P3).²⁴

Leadership

A review article highlighted that leadership within BEmONC teams is associated with peer-to-peer teaching among team members, a progressive approach to management, and the delegation of leadership roles when appropriate.⁴ Leadership plays a pivotal role in determining the success of organizational functions. Future development initiatives at *puskesmas* will prioritize programs tailored to the local context, community conditions, and needs within the facility's catchment area. Emphasis will also be placed on establishing environmental conservation initiatives and enhancing the overall quality of healthcare services. Furthermore, regional *puskesmas* aim to become financially self-sustaining, while simultaneously empowering and engaging communities in health-related activities.²⁴

Support and assistance from the BEmONC team

Effective BEmONC implementation requires robust institutional support encompassing management, resources, and policy. A well-structured organizational culture facilitates collaborative work environments, promotes effective communication, and fosters interpersonal skills development. Supportive environmental mechanisms should be established to nurture a productive workplace, support the integration of advanced information and communication technologies, and stimulate the development of health information systems.⁵

Evaluation of BEmONC Implementation

Self-efficacy of health workers

As proposed by Bandura (1997), self-efficacy arises from the interaction of individual attributes, behavioral patterns, and environmental contexts.²⁵ The self-efficacy of health workers is not solely determined by their technical competencies, but by their perception and confidence in their own abilities.²⁵ Emergency obstetric training programs such as PROMPT have demonstrated improvements in clinical practice, patient outcomes, and healthcare workers' confidence in managing obstetric emergencies.⁸ Training initiatives designed to assess evidence-based knowledge and enhance self-efficacy can be effectively delivered through simulation-based, team-oriented programs for providers of maternal and neonatal care. Findings indicate that 60% of participants reported improved knowledge and enhanced self-confidence following participation in emergency response training for maternal and neonatal cases.¹⁶

Public satisfaction, confidence and trust in health workers

Inadequate team collaboration has been shown to negatively affect maternal and neonatal outcomes, thereby diminishing public trust in healthcare personnel. Poorly managed maternal emergencies contribute to dissatisfaction among approximately 20% of mothers, particularly when considering subsequent childbirth experiences. Substandard care may affect maternal psychological well-being, disrupt breastfeeding, and impair the maternal–infant bond, despite the initial trust placed in healthcare providers. Effective communication among healthcare staff can help rebuild trust and foster a positive perception of the services provided.¹⁵

The study's results demonstrated that responsiveness, provider characteristics, patient safety, empathy, and reliability influence patient satisfaction, with responsiveness being the most influential variable.²⁶ Greater

success among healthcare workers in delivering quality services correlates with increased community acceptance, as reflected in the growing number of women opting to deliver at primary healthcare centers. To maintain and strengthen public trust, strategies must be implemented to enhance emergency obstetric and neonatal skills and ensure active community involvement in the intervention process.¹¹

CONCLUSIONS

Based on the analysis of the data, it can be concluded that interprofessional collaboration within the BEmONC team contributes positively to the reduction of maternal and neonatal morbidity and mortality rates. The effective cooperation among BEmONC team members—including physicians, nurses, and midwives—combined with strategic management and targeted evaluation, represents a fundamental determinant for the successful implementation of obstetric and neonatal care services in primary healthcare settings. Despite the identification of several barriers, such as inadequate infrastructure and insufficient communication practices, strengthening the self-efficacy of healthcare providers and increasing community satisfaction with maternal and neonatal services can contribute to improved outcomes. Ongoing research is warranted to further refine and assess the influence of BEmONC team collaboration on clinical practices and maternal and neonatal health indicators within the framework of primary care.

DISCLOSURES

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Conflict of interest

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