

## **QUALITY OF CARE AND TREATMENT ON EMERGENT THREATS FOR MATERNAL AND NEWBORN**

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### **ABSTRACT**

*Pregnant women and newborns are particularly vulnerable during public health emergencies in Indonesia, where there is a lack of specific guidance to support these groups when emergent threats (ET) arise. Health workers, crucial in delivering maternal and newborn health (MNH) services, often fail to anticipate and address the needs of these vulnerable populations adequately. A literature review analyzing 24 articles from PubMed, Dimension, and Web of Science published between 2016 and 2024 focused on emerging infectious diseases, maternal and newborn health, quality of care, referral systems, and small vulnerable newborns. The review identified substantial gaps in the skills and competencies needed to provide high-quality MNH services globally and in Indonesia. Key issues include non-compliance with existing guidelines, inefficient referral coordination, insufficient monitoring of sick mothers, and a lack of preparedness for emergent threats, all contributing to suboptimal MNH outcomes. These gaps could be addressed by adopting improved training and referral systems, as proposed in the new SVN conceptual framework. Essential actions to enhance MNH outcomes include improving guideline compliance, enhancing referral systems, and ensuring comprehensive training for healthcare providers. Developing an integrated tool tailored to Indonesia's needs that includes SVN, sick mothers, infrastructure, referral systems, and infectious disease management is vital. Implementing these strategies can significantly reduce adverse outcomes and enhance care quality for women and newborns during public health crises.*

**Keywords:** *Emerging infectious disease, maternal and newborn health, Quality of care, referral system, small vulnerable newborns*

### **INTRODUCTION**

Providing high-quality care during pregnancy and childbirth is essential for enhancing health outcomes for women and their newborns.<sup>1</sup> The Sustainable Development Goals (SDGs) and the Global

Strategy for Women's, Children's, and Adolescents' Health (2016–30) have emphasized that addressing equity and quality is essential for overcoming these challenges, particularly in resource-limited settings.<sup>2,3</sup>

The top 10 countries with the highest-burden account for 60% of global maternal deaths, stillbirths, and newborn deaths, and 51% of the world’s live births. Indonesia is in the 8th, with 103,000 maternal, stillbirth, and neonatal deaths in 2020.<sup>4</sup>

In 2022, leading causes of maternal deaths in Indonesia included hypertensive disorders of pregnancy (22.4%), bleeding (20.7%), and heart diseases (6.5%), while neonatal deaths were primarily attributed to low birth weight (28.2%) and asphyxia (25.3%), among other causes.<sup>5</sup> These statistics highlight the ongoing challenges Indonesia faces in reducing maternal and neonatal mortality rates despite improvements in healthcare infrastructure and access. Although access to institutional care has increased, it is still poor for a substantial proportion of women and many avoidable deaths occur within healthcare institutions or despite the presence of a skilled birth attendant.<sup>4</sup>

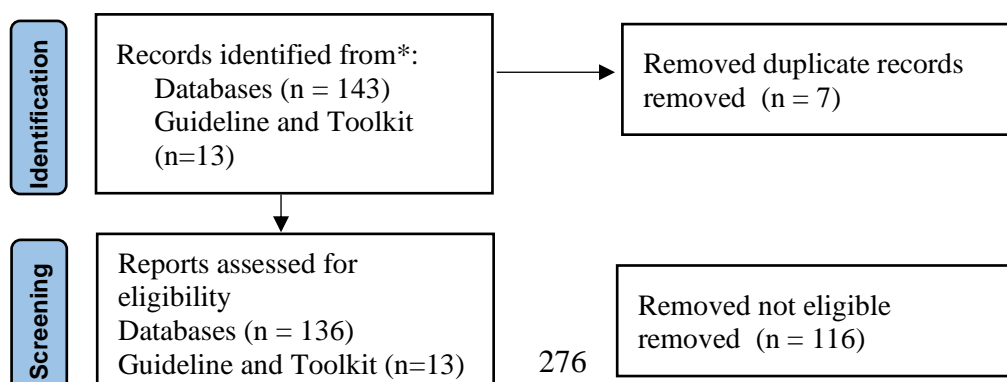
Infectious diseases in mothers are significant contributors to maternal mortality and morbidity rates globally.<sup>6</sup> Moreover, outbreaks of infectious diseases pose a threat to the quality of healthcare facilities. The most impactful past example is likely the COVID-19 pandemic. In addition to infecting pregnant women, the disruption of health services led to a risk of pregnancy complications that were not prevented or managed.<sup>6</sup> The global challenges posed by emergencies have the potential to continue impacting maternal

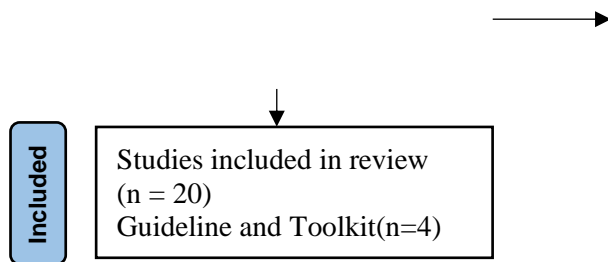
and newborn health in the future.<sup>4</sup> However, to our knowledge, there is no integrated guidance specifically regulating how these vulnerable groups should be facilitated during emergent threats (ET) in Indonesia.

Quality of care during the perinatal period plays a paramount role in mitigating these alarming statistics and the risk of ET. Ensuring access to skilled birth attendants, promoting antenatal care, implementing protocols for early detection and management of complications, and improving healthcare infrastructure are essential components of enhancing neonatal care quality. Therefore, this study aims to assess the current state of maternal and newborn health services in Indonesia and how the quality of care, including emergent threats, should be effectively and comprehensively assessed.

## METHODS

We conducted a comprehensive literature review aiming to assess risk factors that affect the quality of maternal newborn care service, to review existing procedures for clinical management/treatment of emerging infectious diseases in pregnant women and newborns, and to determine existing gaps from global toolkits to effectively screen for and treat emergent threats in mothers and newborns. The peer-reviewed articles were sourced from





**Figure 1** Identification of studies

PubMed and Web of Science published. Guidelines and toolkits were from Averting Maternal Death and Disability Program, and the Ministry of Health of Indonesia. A total 20 articles and 4 guidelines and toolkit were searched. The articles were searched as quality of care, ET, Small vulnerable newborn (SVN), and referral systems from 2016 to 2024. The articles were obtained by conducting a thorough PubMed and Web of Science, as well as reviewing guidelines and toolkits from health organizations and government bodies. This search resulted in 156 records initially identified, with 143 from databases and 13 from guidelines. The search strategy used specific keywords, including "quality of maternal newborn care Indonesia," "referral systems maternal newborn Indonesia," "emergent care maternal newborn Indonesia," and "small vulnerable newborn Indonesia." Boolean operators such as AND and OR were employed to refine the search results and ensure comprehensive coverage of the relevant literature. After identifying the initial set of records, duplicate entries were removed, reducing the number to 136 reports. To focus the study on the direct quality of care, treatment, and healthcare systems for maternal and newborn care in Indonesia, specific exclusion criteria were applied such as studies that primarily addressed screening tests, articles focusing mainly on data management.

## RESULTS AND DISCUSSION

The literature review identified significant gaps in the skills and competencies necessary for delivering high-quality maternal and newborn care services in both global and Indonesian contexts.

### Service Utilization Rates and Influencing Factor

Service utilization rates revealed that 93.44% of mothers received adequate antenatal care, 83.73% had deliveries at healthcare facilities, and 71.46% received postnatal care. These figures indicate a relatively high level of service uptake but also underscore the need for improvement, particularly in postnatal care, which has a direct impact on neonatal mortality.<sup>7</sup> Maternal factors, such as age, significantly influence service utilization, with older mothers more likely to use maternal healthcare services correctly compared to younger mothers. External factors, including urban living and insurance misconceptions, further affect service utilization. For example, urban mothers were less likely to use postnatal services, possibly due to misunderstandings about insurance coverage not extending to urban areas and postnatal care.<sup>7</sup> In addition, there are significant regional disparities in MNH outcomes in Indonesia, driven by facility conditions, quality of care, and maternal factors.<sup>8</sup> The quality of care is further affected by limited health education and counselling for mothers and families, both in intensity and quality, including the recognition of danger signs.<sup>9,10</sup> These gaps

in care can occur even when adequate staffing is in place.<sup>9</sup>

### **Infectious Diseases**

Quality of care gaps in infectious diseases range from wound infections to triple elimination. Midwives often failing to educate mothers on maintaining hygiene for cesarean or episiotomy wounds.<sup>10</sup> Facility factors also significantly impact infectious disease outcomes. Primary healthcare facilities often face issues such as inadequate water supply and unclean or non-functional essential infrastructure, like clean toilets and sinks.<sup>9</sup> Low facility capacity or failure of referral mechanisms should be improved as a priority.<sup>11</sup>

WHO has an initiative called Triple Elimination, which supports the elimination of mother-to-child transmission of three diseases: human immunodeficiency virus (HIV), syphilis, and hepatitis B.<sup>12</sup> The Indonesian Ministry of Health has established its own guidelines for elimination.<sup>13</sup> However, in 2020, among countries in the Asia-Pacific, Indonesia had the fifth highest prevalence of syphilis (3.2%) in women attending antenatal care and the highest rate of HIV (0.7%) among pregnant women.<sup>14</sup> In 2022, it was recorded that 1.6% of pregnant women in Indonesia tested positive for hepatitis B, with the highest incidence in any province reaching 4.8%.<sup>5</sup> Additionally, reasons for women refusing testing and medication include stigma.<sup>15</sup> Therefore, frontline workers may need to provide care that is sensitive to those experiencing stigma.

The situation of healthcare facilities under the coronavirus pandemic may offer important lessons for maintaining the quality of care in the face of future ET. During the COVID-19 pandemic, health facility closures and staff shortages due to

infections strained MNH services. The pandemic exposed the fragility of the healthcare system in Indonesia, underscoring the need for robust emergency response protocols and infection prevention measures.<sup>16</sup> Continuous training for healthcare providers on these protocols is essential to enhance preparedness and response capabilities. The Ministry of Health published the guidelines about COVID-19 on MNH services, which include the treatment, facility protocol, and breastfeeding.<sup>17</sup> However, the difficulty in implementing new guidelines was a significant challenge, as midwives reported the need for brief reviews of new procedures and faced difficulties in gaining clients' understanding of new protocols.<sup>18</sup> Another challenge in implementing the guideline was identified, due to the perceived workload of village midwives, who are responsible for various public health programs alongside maternal and child healthcare.<sup>16</sup> In Indonesia, infectious diseases such as measles, Avian Influenza (AI), Zika virus, and emerging infectious diseases are regularly confirmed or have caused outbreaks, raising concerns about further emerging infectious diseases.<sup>19</sup> Strengthening the quality of facilities to withstand emergencies and the development of protocol to prepare outbreak will be necessary.

### **Referral Systems**

Other health systems that impact the quality of care include referral services. A primary care provider or center systematically refer patients to the next level health facility (a frontline hospital, level B, or level C hospital) rather than directly to a higher-level (Level A) hospital. Mahmood (2021) found that this pyramidal referral system was found to contribute to

poor outcomes in 15 out of 30 deaths, and some women had been referred initially to hospitals where their condition could not be effectively managed.<sup>20</sup> Furthermore, family consent emerged as the largest barrier to effective referral, encompassing multiple challenges such as the complexity of filling out required forms, slow decision-making processes, and the costs associated with transferring to a distant facility.<sup>21</sup> Additionally, the availability of ambulance drivers, both in terms of their number and readiness for standby duty, poses a significant constraint in the referral process.<sup>22</sup>

### **New Frameworks**

This literature review also found the need to assess and intervene in the mother's often forgotten issues and new conceptual frameworks of the newborn to resolve existing issues. Vogel (2023) pointed out that the 6-week timeframe for postnatal care services is often inadequate globally. Beyond this time frame, addressing conditions associated with or exacerbated by intrapartum interventions such as cesarean section, instrumental vaginal delivery, perineal incision, hysterectomy, and laparotomy may affect improvement in long-term outcomes for the mother.<sup>23</sup> For newborns, a new conceptual framework addresses small vulnerable newborns (SVNs), including preterm birth (born before 37 completed weeks of gestation), small for gestational age at birth (birthweight below the 10th percentile of the recommended international, sex-specific birthweight for gestational age standard), and low birth weight (birthweight less than 2500 grams).<sup>24</sup> This framework aims to improve estimates of the global burden and facilitate improved public health programming and monitoring of progress. The framework has a potential

impact on the improvement of identifying targeted interventions, improved training, better integration of care services to address these gaps.<sup>25</sup>

### **Quality of Care Factors for Front Workers**

Even though Indonesia has guidelines for basic birth as well as maternal and newborn emergencies, a knowledge assessment of midwives and nurses working in hospitals and Puskesmas throughout Indonesia shown that there is lack knowledge of basic maternal and newborn care guidelines for handling normal childbirth as well as maternal and newborn emergencies. In addition, health care providers who had received training in the past three years had higher newborn health knowledge scores than those who had not, but these scores were not associated with knowledge of maternal health, but the study had a limited number of questions.<sup>26</sup> In addition to the lack of knowledge of guidelines and insufficient quantity and quality of training among midwives and nurses, other factors impacting healthcare providers include motivation, job satisfaction, compensation, attitudes towards guidelines, and perceptions of patient demands.<sup>27</sup> Therefore, further research is needed on the knowledge and practices of not only nurses and midwives but also doctors concerning these factors.

### **Comprehensive Assessment Tools**

While there are numerous facility assessment tools globally that collect large amounts of data, there might be no uniform global tool that provides a comprehensive picture of WHO indicators for maternal and newborn health.

Delivery observation and post-partum exit interviews are commonly included in many tools, while measures of health

information systems and patient experience of care are least likely to be included. Most of the data these tools collect on maternal and newborn care are related to medical and equipment supply, especially for emergency obstetric care.<sup>1</sup> The Needs Assessment of Emergency Obstetric and Newborn Care, developed by the Averting Maternal Death and Disability program at Columbia University (AMDD), is one of the tools that includes a wide range of indicators. It covers major emergencies such as post-partum hemorrhage and pre-eclampsia or eclampsia, but it does not include specific care for infections or measures for handling the outbreaks.<sup>28</sup>

A limitation of this literature review is that it does not compare each factor affecting the quality of care by region. To evaluate improvements in care quality, it is necessary to establish a baseline level of quality and monitor progress against a clearly defined reference standard.<sup>29</sup> There are numerous existing global facility assessment tools, and most of these tools address a wide range of needs, including the medical supplies and equipment essential for emergency obstetric care. To achieve better MNH outcomes in the future, new tools that include care for SVN and sick mothers, which would be innovative on a global scale, may be needed. Additionally, developing an integrated tool that combines an efficient referral system and comprehensive measures for infectious disease management, tailored to the context of Indonesia, and targeting specific areas for effective intervention, could lead to improved MNH outcomes.

## **CONCLUSION**

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The findings of this literature review reveal significant gaps in maternal and newborn health (MNH) services in Indonesia. There are gaps in MNH outcomes between regions, highlighting the need for targeted interventions and improved coordination of care services. Non-compliance with guidelines and inefficient referral systems are key issues contributing to poor outcomes. Inadequate training and knowledge among midwives and nurses exacerbate these challenges. Infrastructure limitations, such as inadequate water supply and sanitary facilities, critically affect the quality of care. Systemic barriers to effective referrals, including complex forms and high transportation costs, hinder optimal healthcare delivery. The COVID-19 pandemic has exposed vulnerabilities in Indonesia's healthcare system, emphasizing the need for robust emergency response protocols. Strengthening facility resilience to emergencies and developing protocols for outbreak preparedness are crucial. To improve MNH outcomes, it would need to establish a baseline quality of care and monitor progress against clear standards. Developing an integrated tool tailored to the Indonesian context, combining efficient referral systems and comprehensive infectious disease measures, could enhance MNH outcomes.

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