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Minimum Initial Service Package Readiness Assessment (MRA) for Reproductive Health in the Disaster Situation of Mount Merapi Eruption in Magelang Regency

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Abstract

The Minimum Initial Service Package Readiness Assessment (MRA) was a comprehensive tool used to evaluate a region's preparedness in delivering priority reproductive health services during emergencies, as outlined in the MISP. In Indonesia, the MRA had only been implemented in four provinces, including Central Java. This study was the first research conducted in Magelang Regency. It aimed to describe the implementation of the Minimum Initial Service Package (MISP) for reproductive health during the Mount Merapi eruption disaster in Magelang Regency. A qualitative approach with a case study design was employed, involving 10 informants from government agencies, non-governmental organizations, and evacuation site managers. Data were collected through observation, in-depth interviews, and document review, with data validity ensured through triangulation of techniques and data sources. The data analysis included data reduction, data display, and conclusion drawing. The data were analyzed using the Atlas.ti software. The findings indicated that MISP implementation in Magelang Regency during the Mount Merapi eruption disaster remained suboptimal, particularly due to the absence of a dedicated reproductive health sub-cluster. Despite good coordination among government agencies, awareness and understanding of MISP among policymakers remained limited. Village midwives played a crucial role in health service provision at evacuation sites. However, socio-cultural constructs that perceived reproductive health issues during disasters as sensitive posed significant challenges

Introduction

The Disasters can disrupt health services, particularly reproductive health services, which are often overlooked (Amiri *et al*., 2020; Ayuningtyas *et al*., 2021). The need for reproductive health services tends to increase during health crises caused by disasters (Hermawan, Widyaningrum, Lee, Nugroho, Indarjo, Raharjo, *et al*., 2023; Kementrian Kesehatan Republik Indonesia, 2021). Therefore, it is essential to integrate reproductive health services into primary healthcare during emergencies. The Mount Merapi eruption has provided various lessons, particularly regarding access to reproductive health services for vulnerable groups. Several reproductive health-related cases have occurred in evacuation shelters following the eruption. Previous studies have revealed several social phenomena in Mount Merapi evacuation sites that indicate the vulnerability of displaced populations, particularly women. These include instances of premarital sexual activity, some of which have led to unreported cases of sexual violence; unintended pregnancies due to limited access to family planning services; sexual harassment in bathroom areas; and sexual intercourse occurring in open spaces due to a lack of privacy. A preliminary study conducted by the researcher found that designated private booths, known as *bilik mesra*, were available for couples of reproductive age at evacuation sites, although their number remained limited. This indicates a certain degree of attention to

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reproductive health needs in displacement settings (Nuruniyah, 2016). Furthermore, the researcher's preliminary study on refugees from the 2010 Merapi eruption reported a childbirth case at the TEA Deyangan evacuation site that had to be referred to a hospital due to inadequate equipment, potentially increasing the risk of maternal and neonatal complications. Therefore, the provision of family planning services, antenatal care, and skilled birth assistance by trained midwives is essential among displaced populations (Balinska *et al*., 2019).

Reproductive health services in emergency disaster situations are implemented through a program developed by the Indonesian Ministry of Health, namely the Minimum Initial Service Package (MISP) for reproductive health in health crises (Kementrian Kesehatan Republik Indonesia, 2021). The implementation of MISP in buffer villages plays a crucial role in mitigating the impact of disasters on reproductive health. MISP implementation in these areas aims to ensure accessibility to reproductive health services for affected communities, particularly vulnerable groups (Hermawan, Widyaningrum, Lee, Nugroho, Indarjo, & Raharjo, 2023; Nugroho *et al*., 2025). The program has the potential to reduce maternal and child mortality rates, as well as to minimize the risks of sexual violence, the transmission of sexually transmitted infections (STIs), including HIV/AIDS, unintended pregnancies, and various other reproductive health issues that tend to increase during disasters (Kementrian Kesehatan Republik Indonesia, 2021; Myers *et al*., 2018; Nabulsi *et al*., 2021). Based on the aforementioned description, it is evident that reproductive health services in the context of disasters have not yet become a priority and are often overlooked. Therefore, this study is urgent in examining the implementation of the components of the Minimum Initial Service Package (MISP) for reproductive health during the Mount Merapi eruption in Magelang Regency.

Method

This study employed a qualitative research design using a case study approach to explore a social reality that is subjective, complex, and dynamic. The research was conducted in Magelang Regency, Central Java Province, from February to April 2025. A total of 10 informants were selected using the snowball sampling technique. Among them, three informants represented government agencies, three were from buffer village management, and four represented organizations or non-governmental organizations (NGOs).

Table 1. Characteristic of Research Informant

Informant	Affiliate
Informant 1 (B)	Manager of the Sister Village Program, Tamanagung Village
Informant 2 (JP)	Manager of the Sister Village Program, Deyangan Village
Informant 3 (NA)	Volunteer Corps of the Indonesian Red Cross, Magelang Regency
Informant 4 (HK)	Head of Networking and Cooperation Division, Muhammadiyah Disaster Management Center (MDMC), Magelang Regency
Informant 5 (MA)	Treasurer, Muhammadiyah Disaster Management Center (MDMC), Magelang Regency
Informant 6 (AR)	Head of Disaster Prevention Division, Regional Disaster Management Agency (BPBD), Magelang Regency
Informant 7 (IK)	Head of Family Health and Maternal and Child Health (MCH) Division, Magelang District Health Office
Informant 8 (ES)	Secretary of the Community-Based Disaster Risk Management Organization, Pucungrejo Village
Informant 9 (EM)	Coordinating Midwife, Borobudur Public Health Center
Informant 10 (LM)	Coordinating Midwife, Muntilan 2 Public Health Center

Primary data were collected through in-depth interviews with informants using a semi-structured interview guide. Secondary data were obtained through observation (by directly observing the research setting and gathering information from informants) as well as through document reviews, which served to support and validate the findings from interviews and observations. Triangulation of research findings was conducted by comparing interview results across informants and performing cross-verification with observation and documentation data to enhance the credibility of the study.

Data processing and presentation were carried out by compiling all relevant and representative information. Once the data were collected, the analysis was conducted through three main stages: data reduction, data display, and conclusion drawing. The processed data were presented in narrative form. The researchers used software tools to assist in extracting meaning units, codes, and categories from the verbatim transcripts. RNA performed the initial coding independently. Conclusions were drawn after the results were discussed with AAN, SF, and EN. An example of the coding process is presented in Table 2. Written informed consent was obtained from all informants before they participated in the study. This research received ethical clearance from the Health Research Ethics Committee of Universitas Negeri Semarang (Approval No. 664/KEPK/FK/KLE/2024).

Table 2. Example of the Coding Process

Theme	Sub-theme	Interpretation of Findings
General Coordination	Well-Structured coordination	Coordination is led by the Regional Disaster Management Agency (BPBD) in collaboration with nine other government departments in disaster management.
	Absence of a reproductive health sub-cluster	The reproductive health sub-cluster has not been established, limiting the operational implementation of MISP.
Prevention of sexual violence and survivor response	Limited reporting of sexual violence cases	No reports of sexual violence have been recorded; however, there is a possibility that unreported cases exist.
	Availability of facilities to meet sexual needs	*Bilik asmara* (intimacy booths) are available at evacuation sites, though limited in number and utilization.
Prevention of HIV and other STIs	HIV/STI transmission prevention	No HIV/STI cases were identified; prevention strategies include education, family-based shelter separation, and the provision of contraceptives for those in need.
	Access to and cultural approaches toward contraceptives	Condoms are available, but their use remains limited due to a lack of information and inadequate socialization efforts in the evacuation sites.
		Religious values play an important role in the prevention of HIV and other STIs.
Prevention of maternal and neonatal mortality	Maternal-neonatal monitoring and referral system	Pregnant women and infants are monitored from an early stage, and referrals are made to health facilities in the event of emergencies.
	Special facilities for vulnerable groups	Dedicated spaces and essential supplies are available for pregnant women and newborns, although in limited quantities.
Prevention of unintended pregnancy	Availability and access to family planning services	Basic contraceptives (oral pills, injectable contraceptives, and condoms) are available at the health posts in evacuation sites.
Adolescent reproductive health	Limited attention to adolescents	Adolescents are not yet considered a priority group in disaster response at evacuation sites.
Minimum health services for children	Emergency education services and psychosocial support	Temporary schools are held in shifts; informal activities such as trauma healing sessions are also conducted.
	Availability and quality of child-friendly spaces	Child-friendly spaces are limited and not well-organized; toy donations are available in some evacuation posts.

Minimum health services for the elderly	Physical health services and psychosocial support for the elderly	Routine health check-ups are available for elderly individuals; they are also involved in various evacuation activities
Integration of comprehensive reproductive health services into basic health services	Limited service availability and human resource capacity	Reproductive health services remain limited; only one out of ten informants had received training on reproductive health in emergencies.

Result and Discussion

The Minimum Initial Service Package (MISP) is a reproductive health service program for disaster situations, implemented across Indonesia since 2008, and developed by the Ministry of Health of the Republic of Indonesia (Kementrian Kesehatan Republik Indonesia, 2021).

General Coordination

The designated coordinator of MISP is, by definition, the coordinator or head of the reproductive health sub-cluster (Chaudhary *et al*., 2017). However, field findings in Magelang Regency indicate a structural gap, as the reproductive health sub-cluster has not yet been established.

"...there isn't one yet, we only have disaster nutrition..." (IK)

"...as for the team, it doesn't seem to be structured yet..." (LM)

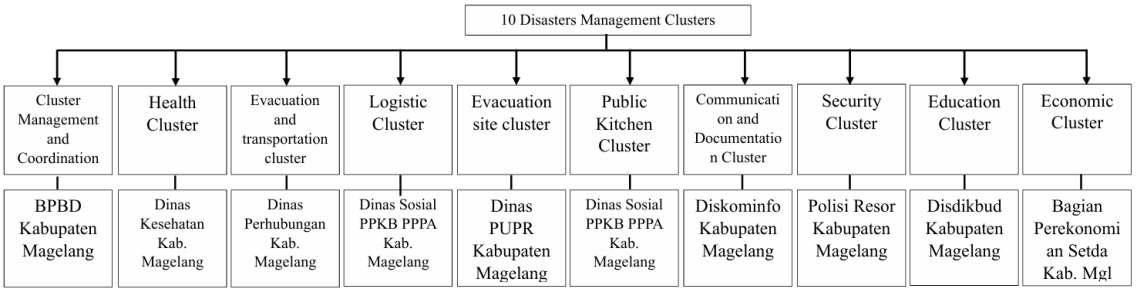
The Regional Disaster Management Agency (BPBD) of Magelang Regency has performed its coordination function with the support of nine related departments. Nevertheless, the absence of a reproductive health sub-cluster has resulted in poorly directed reproductive health services. This aligns with the findings (Onyango *et al*., 2013; Tanabe *et al*., 2022) which revealed the lack of designated individuals or organizations responsible for MISP or health sub-cluster coordination, leading to an absence of clear planning in its implementation.

The evacuation coordination process in Magelang Regency demonstrates an organized structure, with a flow led by the Regional Disaster Management Agency (BPBD) of Magelang and supported by nine other relevant departments. This reflects the existence of a collaborative framework involving multiple stakeholders, contributing to an effective evacuation response and ultimately reducing disaster-related risks (Nugroho *et al*., 2025).

Prevention of Sexual Violence and Response to Survivors' Needs

Following the 2010 Mount Merapi eruption, disaster management efforts experienced significant improvements, including the establishment of the "sister village" program, which fosters partnerships between affected villages and buffer villages. This synergy has contributed to a sense of safety and comfort among evacuees during their stay in evacuation sites. Moreover, it has had a positive impact in minimizing reported cases of sexual violence during the emergency response phase.

"...no reports yet, there hasn't been such



Picture 1. 10 Disaster Management Clusters

an incident of sexual violence..." (JP)

"...well, if it wasn't reported to us directly, we wouldn't know..." (HK)

As a preventive measure, structured reporting and response mechanisms for sexual violence cases have been made accessible to evacuees through both evacuation posts and direct reporting channels to camp coordinators. Evacuation sites with organized mechanisms tend to have higher awareness of the importance of protection, as well as clear planning stages for implementing protective measures (Onyango *et al*., 2013). Additionally, various risk-reduction strategies have been applied, such as separating shelter units by family, providing gender-segregated toilets, and ensuring adequate lighting. Previous studies also emphasize that disaster-resilient shelters and evacuation posts that are gender-sensitive are critical for protecting survivors in emergency contexts (Murphy *et al*., 2023; Nuriana *et al*., 2020; Yoshihama, 2021).

The findings indicate that the provision of intimacy booths or private spaces for couples of reproductive age (PUS) in evacuation sites following the 2020 Mount Merapi eruption has been initiated, although it remains a service that receives limited attention in disaster emergency settings. This reflects a recognition of evacuees' sexual needs, but also highlights that the realization of such support is still far from ideal. Informant statements are consistent with previous studies (Milawaty, 2021), which emphasizes the urgent need for intimacy booths to allow married couples to fulfill their sexual needs.

"...reproductive health services such as intimacy booths have been provided, but they are still limited..." (NA)

"...there used to be a 'bilik cinta..." (EM)

"...we have already provided space for sexual needs, especially for married couples..." (ES)

Prevention of Transmission and Reduction of Morbidity and Mortality due to HIV and Other STIs

Research findings indicate that, based on available reports, HIV and other sexually transmitted infections (STIs) have not emerged as prominent health issues within the evacuation settings. Although no HIV cases were reported, a referral system to more comprehensive health facilities for further diagnostic testing has been established for evacuees showing clinical symptoms of HIV or other STIs (Onyango *et al*., 2013; Roxo *et al*., 2019; Widjaja *et al*., 2023). This reflects the readiness of the health system to manage potential HIV/STI cases through a referral mechanism, ensuring that evacuees with symptoms or at risk receive appropriate care (UNAIDS, 2021).

"...our guiding principle is religion, that's our strength, it helps us stay disciplined..." (HK)

One of the key strategies in preventing HIV and other STIs involves the integration of faith-based approaches, recognizing that religion and culture in Indonesia generally do not support premarital sexual relations. This approach is considered effective, as religious leaders and communities play an essential role in preparedness, response, and recovery efforts during disasters, particularly in ensuring protection for vulnerable groups (Tambunan *et al*., 2021; UNAIDS & UNHCR, 2007). Field data underscore that access to contraceptive services, particularly condoms, was adequately available in evacuation shelters following the Mount Merapi eruption in Magelang Regency.

"...for contraception issues, it's been addressed through collaboration with the Family Planning Field Officers (PLKB) and the social services agency..." (IK)

"...condoms are available, but there's no HIV testing..." (LM)

Although contraceptives were available, their utilization remained limited. This was primarily due to the lack of outreach and information dissemination to displaced populations, as well as prevailing cultural taboos surrounding reproductive health issues during emergencies. Displaced individuals often lacked access to HIV prevention programs, and basic HIV-related support frequently received insufficient attention. Furthermore, cultural considerations significantly influenced the availability and acceptance of condoms in evacuation settings (Onyango *et al*., 2013; UNAIDS & UNHCR, 2007). In the context of a public health crisis, condoms play a critical role as the only contraceptive method proven to be effective in reducing the risk of HIV and other sexually transmitted infections (STIs) (Cooper

et al., 2020; Dambre *et al*., 2022; Kementrian Kesehatan Republik Indonesia, 2021).

Prevention of Unintended Pregnancies

The provision of free condom access is a core objective of the Minimum Initial Service Package (MISP), and it falls under the responsibility of the public health sector, which includes adequate emergency and post-disaster response services related to reproductive health (Pearson *et al*., 2023; Svallfors & Scholar, 2024; UNAIDS, 2010).

"...usually pills and condoms are already available..." (ES)

"...besides condoms, there are birth control pills and injections, that's all..." (IK)

In addition to condoms, other available contraceptive methods included oral contraceptive pills and injectable contraceptives. These services aim to prevent unintended pregnancies during an emergency (Yulianti *et al*., 2022). Village midwives served as coordinators for displaced persons in need of contraceptive services. Disasters can elevate the demand for contraception as a preventive measure against unintended pregnancies (Elimian *et al*., 2024; M *et al*., 2016; Nugroho *et al*., 2025). The repositioning of contraception within the MISP framework reflects a growing recognition of its importance in preventing unintended pregnancies during crises (Foster *et al*., 2017; Gyan & Marhefka-Day, 2021; Mbachu *et al*., 2021).

Prevention of Increased Maternal and Neonatal Morbidity and Mortality

Pregnant women are categorized as a priority vulnerable group (Helmizar *et al*., 2024). Health teams conduct initial assessments of displaced individuals, which include collecting medical histories, particularly for pregnant women and newborns, enabling timely and appropriate emergency interventions when necessary.

"...the health team, of course, conducts initial assessments (for pregnant women)..." (JP)

The data collection and mapping of pregnant women, women in labor, and newborns are carried out as part of the information-gathering process led by those responsible for maternal and neonatal health components (Dhital *et al*., 2019; Pusat Krisis Kesehatan Kementerian Kesehatan RI, 2023).

"...we also have 24-hour standby ambulances, both from the village and the health office, to handle emergencies such as labor or contractions..." (B)

A 24-hour referral system must be in place at evacuation sites to facilitate both transportation and communication from shelters to health care facilities (Casey *et al*., 2015; Pusat Krisis Kesehatan Kementerian Kesehatan RI, 2023). This system is part of the public health sector's responsibility to provide adequate emergency response infrastructure during disasters (Beek *et al*., 2021; Sajow *et al*., 2021). Moreover, the contribution of midwives to disaster response and risk reduction is critical. This is supported by the WHO's recognition of the importance of addressing the health needs of mothers, newborns, and women during crises (Ku Carbonell *et al*., 2024; Lordfred *et al*., 2021). Protective measures for these vulnerable groups include the provision of adequate and comfortable shelter, placement in areas with improved access to sanitation and ventilation, and centralized accommodations to facilitate the delivery of comprehensive health services (Purno *et al*., 2023; Zhang *et al*., 2024).

Adolescent Reproductive Health and Youth Engagement

Adolescence is a distinct phase of human development (Prabamurti *et al*., 2024; Raharjo *et al*., 2019). Findings from this study reveal that adolescents were not identified as a vulnerable group in the planning and implementation of emergency response efforts. Informants' statements indicate a perception that adolescents are capable of functioning independently without the need for targeted intervention.

"...there were no specific programs for adolescents in 2020, they were still able to carry on with their activities there..." (B)

In disaster contexts, adolescents are often perceived as adaptable, energetic individuals with the capacity to manage stress on their own. As a result, they are frequently overlooked in protection schemes and the provision of basic services in evacuation shelters (Casey, 2015; Pusat Krisis Kesehatan Kementerian Kesehatan RI, 2023). This study also found that there were no youth-friendly spaces established in the

evacuation sites. This highlights a significant gap in the availability of facilities specifically designed to address the social and psychological needs of adolescents in displacement settings.

Minimum Health Services for Children Under Five

Findings from this study highlight that several evacuation sites successfully facilitated educational activities through the establishment of emergency schools, which were implemented in two main schemes: formal and informal education.

"...so the emergency school used the same facility as the one in Pucung villagerefugee children used it in the afternoon, while local students attended in the morning..." (ES)

"...the elementary school children were temporarily enrolled in our existing school..." (JP)

"...for informal education, we had morning and afternoon sessions as part of psychosocial support services..." (HK)

The formal education scheme was carried out through two approaches: Class integration, where students from affected villages were incorporated into existing classes in host community schools. Classes comprised students from both communities, and teachers from the disaster-affected villages assisted with the learning process; Rotational (shift-based) scheduling, whereby classrooms were used by local students in the morning and refugee children in the afternoon. Meanwhile, informal education took place in temporary tents or open yards and was facilitated by external volunteers under psychosocial support services. Education is not only a fundamental right but also serves as a critical protective mechanism during emergencies, offering physical, psychosocial, and cognitive safeguards that can save and sustain lives (Bhadra, 2016; Ramezankhani & Sabouri, 2023; Zhong *et al*., 2021).

Some informants reported the presence of adequately functioning and supportive child-friendly spaces that contributed positively to children's psychosocial well-being. Safe play areas for children are recommended in psychosocial and mental health support guidelines as essential for receiving or mobilizing psychosocial support (Atazadeh *et al*., 2022; Bhadra, 2016; Burkhart *et al*., 2023). In addition, psychosocial support services were implemented through trauma healing programs aimed at helping children return to normal daily activities.

Minimum Health Services for the Elderly

The study revealed that the elderly population received particular attention in evacuation sites due to their heightened vulnerability to both physical and mental health issues.

"...we continue to monitor health services and conduct regular check-ups for the elderly in the shelters..." (B)

Older adults often face significant barriers in accessing health care, including limited physical access to health facilities, inappropriate or inadequate medical services tailored to their needs, insufficient supply of medications and care, and unaffordable medical costs (Abi Chahine & Kienzler, 2022; Boetzelaer *et al*., 2024). In addition to medical services, basic psychosocial support was also provided to enhance comfort and reduce potential stress among the elderly (Sri-on *et al*., 2019; Ye *et al*., 2022). This support involved actively engaging older adults in daily activities such as cooking, cleaning the environment, and meal preparation. Activity planning for the elderly must adhere to the principle of "not harm," meaning it should avoid exposing them to additional risks while ensuring appropriate protective measures are in place (Bausch *et al*., 2021; HelpAge International, 2013). The treatment of the elderly as a vulnerable group in evacuation settings reflected two distinct approaches. Some evacuation sites established dedicated spaces for the elderly, aiming to create a more comfortable, secure, and age-appropriate environment tailored to their specific needs (Perdamaian *et al*., 2020; Pusat Krisis Kesehatan Kementerian Kesehatan RI, 2023; Ye *et al*., 2022).

"…yes, based on vulnerable groups, the waste bank area is allocated for the elderly and toddlers, and the community health post (PKD) also serves toddlers because it has medical equipment..." (ES)

"…they remained within their family clusters because they felt more comfortable. There's the wife, the children, if they were separated, it would cause more stress. So sleeping arrangements were still organized by family

units..." (LM)

This form of clustering is intended to reduce stress and health problems associated with overcrowded evacuation conditions. The provision of dedicated spaces for the elderly thus represents an effort to protect their rights and well-being during disaster situations. Beyond physical arrangements, ongoing accompaniment also plays a crucial role in providing psychosocial support, helping to maintain the mental health of older adults amid the stress and uncertainty brought on by displacement (Nasar *et al*., 2022; Yarmohammadian *et al*., 2023).

Planning for Comprehensive Reproductive Health Services Integrated into Basic Health Services

Interviews with several informants revealed that the availability of reproductive health services in evacuation settings remained limited and had only reached a minimally adequate level.

"…so far, it's still not optimal, there is still a strong need for more facilities to support those services..." (NA)

This indicates a gap between displaced individuals' rights to comprehensive reproductive health services and the reality of service provision on the ground. The integration of reproductive health services into every health-related disaster response is expected to better meet service demands (Özvarış *et al*., 2024). By embedding reproductive health services within all aspects of health emergency response, service needs can be more adequately addressed (Fouad *et al*., 2023; Tran *et al*., 2020). The integration of reproductive health services into basic emergency health care is highly dependent on the capacity and expertise of health workers involved (Nugroho *et al*., 2025). Possessing specific competencies for delivering reproductive health care during crises is essential. However, findings indicate that the number of health personnel trained specifically in providing reproductive health services in emergency settings remains limited. This underscores a significant gap in the readiness of human resources to deliver reproductive health services that are both comprehensive and responsive to the needs of displaced populations.

Conclusion

The implementation of the Minimum Initial Service Package (MISP) in Magelang Regency during the Mount Merapi eruption revealed significant gaps between field needs and the application of global standards. Key challenges included the absence of a reproductive health sub-cluster, limited understanding among health personnel, inadequate privacy facilities, and suboptimal mechanisms for reporting sexual violence. Nevertheless, the active roles of village midwives, volunteers, and local institutions served as critical strengths in supporting the delivery of essential services. A collaborative and adaptive approach remains necessary to ensure reproductive health protection for vulnerable groups in crises. The study recommends the formal establishment of a reproductive health sub-cluster and the integration of MISP into regional planning documents to ensure the legal and sustainable implementation of disaster responseparticularly in the area of reproductive health.

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