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Implementation of Bloom's Theory in Quality Improvement Collaborative Strategies to Reduce Preeclampsia Cases

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Quality Improvement Collaborative; Preeclampsia Prevention; Maternal Health.

ABSTRACT
The main target of the third goal of the Sustainable Development Goals (SDGs) regarding health and well-being is to reduce the Maternal Mortality Rate to below 70 per 100,000 live births by 2030. Preeclampsia is the leading cause of maternal death in 2023. Reducing the Maternal Mortality Rate will not be effective if it relies solely on government programs without support and participation from all parties. The Quality Improvement Collaborative is a form of cooperation among staff, professions, and work units focused on maximizing the use of resources to achieve the shared goal of improving patient care quality. This activity aims to deepen the understanding of the Quality Improvement Collaborative in reducing preeclampsia cases, using a socialization method involving several work units. The community service on Quality Improvement Collaborative to reduce preeclampsia cases was held on January 17, 2025, in two sessions. It used the Participatory Learning and Action (PLA) approach and included three stages: preparation, implementation, and evaluation. The evaluation results of the pre-test and post-test using the Wilcoxon test showed a significant increase in knowledge, with a p-value of 0.000. This service effectively increased knowledge, which serves as the main foundation for taking action. Similar activities can be continued by utilizing more innovative media to enhance their effectiveness.

INTRODUCTION

According to the World Health Organization (WHO) report in 2020, one maternal death is recorded every two minutes. In the same year, nearly 800 women lost their lives daily due to pregnancy and childbirth complications, most of which were preventable (Lioni Argista et al., 2024). In Indonesia, maternal mortality remains a critical concern for pregnant women. Approximately 10% of pregnant women worldwide experience preeclampsia, contributing to around 76,000 deaths annually (Septiyono et al., 2024). By 2023, Indonesia still had the highest Maternal Mortality Rate (MMR) in Southeast Asia, with 183 deaths per 100,000 live births. The causes of maternal mortality in Indonesia include hypertensive disorders during pregnancy (33.1%), obstetric hemorrhage (27.03%), non-obstetric issues (15.7%), other obstetric complications (12.04%), pregnancy-related infections (6.06%), and other factors (4.81%) (Pabidang, 2024). In 2023, East Java recorded 499 maternal mortality cases, with Jombang Regency ranking fifth, reporting 24 cases (Dinas Kesehatan Provinsi Jawa Timur, 2024).

Reducing the Maternal Mortality Rate (MMR) to below 70 per 100,000 live births by

2030 is a key target of the third Sustainable Development Goal (SDG), which focuses on good health and well-being (Purwanti, 2024). Efforts to reduce the MMR will not be effective if they rely solely on government programs without support and participation from all stakeholders (Mahada et al., 2023). The Indonesian government has implemented various initiatives to lower the MMR and Infant Mortality Rate (IMR), including the Expanding Maternal and Neonatal Survival (EMAS) and the Momentum Private Health Care Delivery (MPHD) programs.

These initiatives are collaborations between the Ministry of Health and the United States Agency for International Development (USAID). The MPHD program focuses on six provinces: North Sumatra, Banten, DKI Jakarta, East Java, South Sulawesi, and East Nusa Tenggara (Purwanti, 2024).MPHD developed strategies to reduce Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) through a Quality Improvement Collaborative (QIC) platform by integrating the involvement of all staff or fostering collaboration among staff within healthcare facilities. These strategies are divided into two categories: internal and external strategies (Lovato & Simón, 2025).

The internal strategies include ensuring the readiness of supporting equipment, early detection, screening, treatment, monitoring, evaluation, and training (Karim, 2025; Papareddy et al., 2025). Meanwhile, external strategies aim to ensure that communication between referral networks adheres to established procedures (Ni & Wang, 2025). Quality improvement is a process designed to maintain the effectiveness of existing mechanisms, ensuring sustainable quality. This is achieved by optimizing resource distribution, assigning personnel to implement quality improvement projects, providing staff training, and formulating long-term strategies to sustain achieved quality while continuously improving areas that need enhancement (Husna Nashihin et al., 2021).

Interprofessional Collaboration (IPC) is a strategy used to enhance service quality. The main objectives of IPC are to ensure patient safety, address human resource shortages, and create a more effective healthcare system. Poor implementation of IPC can negatively impact hospitals, staff, and patients as service recipients (Andi Mappaware et al., 2021). Thus, Quality Improvement Collaborative (QIC) can be understood as a collaborative effort among staff, professions, and work units to optimize the use of available resources, with the shared goal of improving and enhancing the quality of patient care (Carstensen, Goldman, et al., 2024; Carstensen, Kjeldsen, et al., 2024).

The Nahdlatul Ulama Health Institute (LKNU), in collaboration with USAID, implemented a program to reduce the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) using the Quality Improvement Collaborative (QIC) strategy developed by MPHD. This program began in 2023 and involved hospitals in East Java under the Association of Nahdlatul Ulama Hospitals (ARSINU). Jombang Regency was one of the focus areas for intervention in the MPHD and LKNU programs, which aimed at reducing MMR and IMR. The program included only a few hospitals designated as intervention sites by MPHD and LKNU. The Jombang Regency Health Office, responsible for overseeing the MPHD program, selected three hospitals based on existing cases and predetermined criteria. RSIA Muslimat Jombang was chosen as an intervention site due to its membership in ARSINU and its status as a maternal and child hospital, serving as a primary referral center for maternal cases in Jombang Regency.

An analysis involving direct engagement identified four key issues to address. First,

outpatient screening by frontliners was inadequate, as they lacked the ability to recognize signs of emergency in pregnant women. Second, there was no specialized screening system for early detection of preeclampsia in outpatient clinics, resulting in preeclampsia patients being mixed with other patients in queues. Third, communication within the referral system did not consistently ensure the administration of appropriate preventive therapy for preeclampsia. Fourth, collaborative monitoring and evaluation of preeclampsia case management across professions were not conducted routinely. Early detection of preeclampsia symptoms in pregnant women is a critical indicator that needs to be prioritized. Symptoms such as high blood pressure, edema, and other early warning signs can indicate the potential onset of preeclampsia. Identifying these signs early allows for timely medical intervention. Preventing preeclampsia requires innovative approaches to provide better opportunities for mothers and babies to lead healthy lives (Septiyono et al., 2024).

Preeclampsia screening is an essential part of the collaborative healthcare services aimed at preventing preeclampsia, involving both primary healthcare providers and referral facilities. This screening process includes identifying risk factors, assessing scores, drawing conclusions from the results, and collaborating with other healthcare professionals at referral facilities when necessary (Pangesti et al., 2024). An increase in Mean Arterial Pressure (MAP) is a key predictor of preeclampsia in pregnant women, in line with the theory that preeclampsia is a form of gestational hypertension that develops after 20 weeks of pregnancy. MAP measurement as an indicator of preeclampsia is more effective during the second trimester, as blood pressure increases in the first trimester are physiological and may affect the accuracy of measurements ((Zainiyah et al., 2024). Urinary protein is an important diagnostic criterion for preeclampsia, but it typically appears only in the later stages of pregnancy. As a result, preeclampsia may be found without urinary protein, especially if the baby is born prematurely. Urinary protein can appear before hypertension occurs. Factors such as kidney damage, stress, preeclampsia, hypertension, and certain medications may contribute to the presence of urinary protein (Mandani et al., 2024).

Hospital staff who understand the importance of Interprofessional Collaboration (IPC) in preventing preeclampsia can apply this knowledge in various preventive efforts, such as education, screening, and early management of preeclampsia. Interprofessional collaboration is crucial in handling obstetric emergencies, particularly preeclampsia. Staff with skills in teamwork, coordination, and joint decision-making are more effective in preventing and managing preeclampsia cases (Andi Mappaware et al., 2021). Previous research by Andi Mappaware et al. (2021) demonstrated that interprofessional collaboration in handling preeclampsia and eclampsia cases in Wajo Regency significantly improved early detection and management. Similarly, studies by Mahada et al. (2023) in South Africa showed that collaborative strategies effectively reduced maternal mortality rates. However, these studies have not integrated educational theories into their collaborative approaches, particularly Bloom's taxonomy for cognitive development in healthcare training.

Thus, collaborative efforts to enhance knowledge among all staff in work units are expected to lead to positive changes in service delivery, both in terms of quality and quantity, in reducing maternal mortality through early detection of preeclampsia. This empowerment activity aims to improve knowledge of quality improvement collaboration in efforts to reduce

preeclampsia cases, as developed by MPHD and LKNU. The objective of this community service is to enhance healthcare workers' knowledge through Quality Improvement Collaborative based on Bloom's cognitive learning framework, progressing from basic understanding to practical application in preeclampsia prevention. The novelty of this activity lies in the integration of educational theory into community-based collaborative health improvement, providing a structured approach to capacity building. This initiative has significant implications for supporting Sustainable Development Goal 3 on maternal health and strengthening hospital readiness for maternal risk prevention through systematic knowledge enhancement and interprofessional collaboration.

METHOD

The community service activity on quality improvement collaboration to reduce preeclampsia cases was conducted on January 17, 2025, in two sessions. The method used in this activity was the Participatory Learning and Action (PLA) approach, aimed at educating healthcare personnel about efforts to reduce preeclampsia cases through a quality improvement collaborative approach. This activity consisted of three stages: preparation, implementation, and evaluation. The preparation stage included coordination meetings and surveys. During the implementation stage, dissemination was carried out through lectures and interactive Q&A sessions. The evaluation stage involved administering pre-tests and post-tests before and after the dissemination. A total of 34 participants completed both the pre-test and post-test.

The success of the dissemination was evaluated based on the improvement in participants' scores from the pre-test to the post-test (Ratnaningsih et al., 2021). The instructional procedure, which combines a pre-test as the initial step and a post-test at the end, is designed to assess participants' cognitive development concerning the material provided or to be provided during the dissemination (Adri, 2020). Employing a learning method that includes pre-tests and post-tests can foster participants' readiness, boost their motivation, and help improve and develop their capabilities during the learning process(Novianti Dwi, 2018). Statistical analysis was conducted on the pre-test and post-test evaluations using the Wilcoxon Test. This test was applied to evaluate differences in participants' knowledge before and after the material was presented. If the p-value is < 0.05, the null hypothesis is accepted; if the p-value is > 0.05, the null hypothesis is rejected (Nurtjahjo et al., 2021)(Antari et al., 2024).

RESULT AND DISCUSSION

The initial steps of the activity, including the survey, were conducted on January 16, 2025, through a coordination meeting with the management team of RSIA Muslimat Jombang regarding the implementation of the program. The meeting was attended by the Director, the Head of Medical Services Division, and the Heads of relevant units.

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Figure 1. **Coordination Meeting**
Source: Personal Documentation, 2025

The activity was carried out on January 17, 2025, divided into two sessions. The first session was intended for frontline work units (security, customer service, and registration) as well as the obstetrics and gynecology clinic, while the second session targeted the emergency department, maternity ward, inpatient maternal unit, and operating room.

Figure 2. **Implementation of Activities in Session 1 and Session 2**
Source: Personal Documentation, 2025

The socialization activity began with a pre-test to assess the participants' initial knowledge about the material to be presented. After the material was delivered, a post-test was administered to evaluate the effectiveness and success of the program. The increase in participants' knowledge about QIC preeclampsia was achieved through the socialization method, with materials developed by MPHD and LKNU.

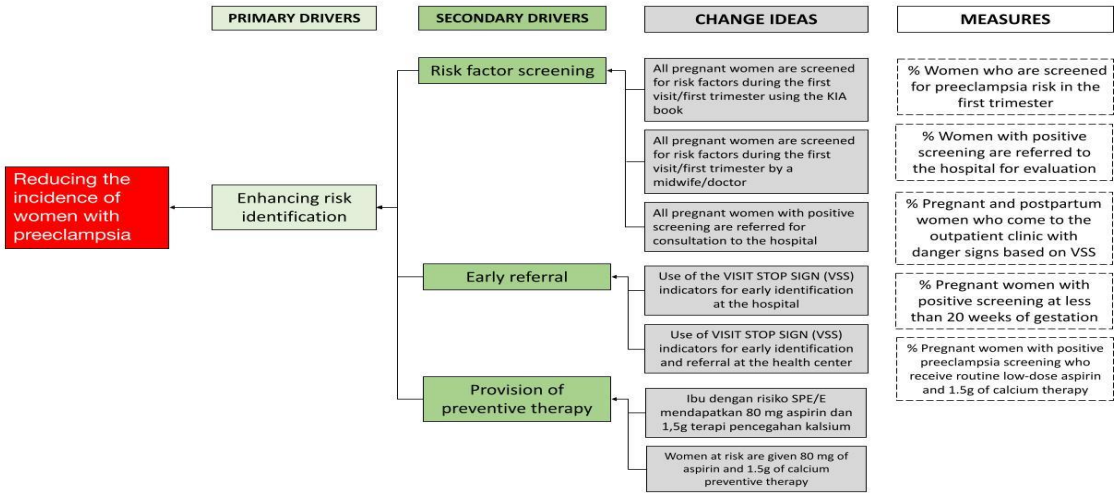

Figure 3. Driver Diagram for Reducing Preeclampsia Incidence

Source: MPHD and LKNU, 2025

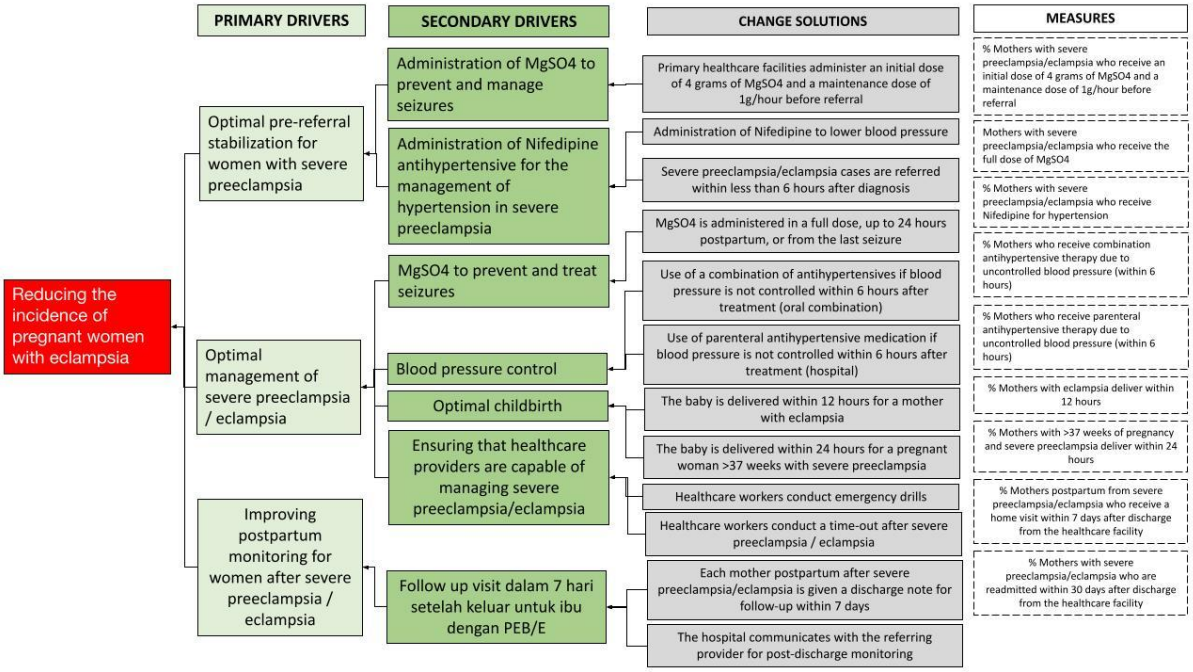

Figure 4. Driver Diagram for Reducing Eclampsia Incidence

Source: MPHD and LKNU, 2025

The participants in this activity came from various work units, including frontliner, clinics, emergency department, delivery rooms, inpatient maternal units, and operating rooms. The majority of participants were from the frontliner unit, as the goal of this activity was to enhance their knowledge about preeclampsia screening when patients first arrive at the hospital before interacting with medical staff. Participants were predominantly those with a bachelor's degree (Table 1).

Table 1. Percentage of Work Units and Education Levels

Subject characteristic	n	%
Work Unit		
Frontliner	9	26.5
Clinic	5	14.7
Emergency Department (IGD)	5	14.7
Delivery Room	6	17.6
Inpatient Maternal Unit	5	14.7
Operating Room	4	11.8
Latest education		
Junior high school	8	23.5
Diploma 3	8	23.5
Bachelor's Degree (S1)	18	52.9

Source: Primary Data Processed, 2025

The improvement in participants' knowledge is reflected in the significant difference between the pre-test and post-test (p-value = 0.000), analyzed using the Wilcoxon Test with a 95% confidence level. Additionally, there was an increase in the median score from 62.94 to 81.18. A total of 30 community service participants showed an increase in knowledge after the activity. This indicates that the objective of the activity to enhance participants' knowledge was achieved (Table 2).

Table 2. Wilcoxon Test Results for Pre-test and Post-test Participants' Knowledge

Variable	Median (min– max)	p-value
Pre-test	62.94 (40-80)	0.000
Post-test	81.18 (50-10)	
Wilcoxon Test, 2 subjects showed a decrease in knowledge, 30 showed an increase, and 2 remained the same.		

Source: Primary Data Processed, 2025

A significant increase in knowledge is expected to improve the quantity and quality of services by applying a quality improvement collaborative approach in the prevention of preeclampsia. Knowledge is the fundamental basis for carrying out an action. The most important factor in the successful implementation of knowledge is readiness, which acts as a trigger for action. Lack of readiness can lead to failure in applying behaviors that align with the knowledge learned. Even though a person may have knowledge, if readiness is lacking, that knowledge cannot be effectively implemented (Utariningsih et al., 2022). In line with Bloom's taxonomy, the thinking process includes stages that need to be mastered in order for someone to apply theory into action. This taxonomy outlines the cognitive skills that must be mastered to transform knowledge into practical and effective behavior (Ulfah & Arifudin, 2023).

The activity received positive feedback, as seen from the questions posed by non-health staff from the frontliner unit. During the discussion session, several staff shared experiences about pregnant women who came for examination with a preeclampsia diagnosis from a doctor.

These pregnant women joined the queue and received a calling number at the end of the service. With the new understanding gained from this activity, the existing problem could be identified, and solutions to improve service quality were found.

Although the majority of participants showed improvement in their knowledge, two participants had the same knowledge before and after the activity, and two others actually showed a decline. This could be attributed to various factors, such as fatigue or a lack of focus during the activity. However, follow-up actions, such as repeating similar activities with modified methods such as adding early detection cases of preeclampsia according to the respective work unit into the training material are necessary.

The final results of the community service activity, using the socialization method, showed that many participants gave positive feedback. About 83% of participants stated that the material presented was easy to understand, due to the engaging media used. However, 17% of participants disagreed with the timing of the activity, considering it inconvenient. This can be understood as the socialization was conducted during the afternoon, while most participants were service staff with both day and night shifts.

CONCLUSION

The Quality Improvement Collaborative socialization activity held at RSIA Muslimat Jombang received very positive feedback, effectively addressing service delivery challenges by enhancing staff knowledge and providing practical solutions. The significant increase in participants' knowledge was demonstrated by a Wilcoxon test showing a p-value of 0.000, although material comprehension reached only 83%, indicating some areas were not fully optimized. Future research should focus on exploring the impact of integrating more innovative media and advanced educational tools to maximize engagement and implementation effectiveness in similar collaborative programs, further improving outcomes in healthcare service delivery. We would like to express our sincere gratitude to RSIA Muslimat Jombang, LK PBNU, MPHD, and USAID for their full support, both in terms of materials and funding, which has enabled the successful implementation of this community service activity.

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