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Capacity Building for Maternal Emergency Services Using Low Tech High Fidelity (LTHF) Simulator Method and Interprofessional Collaboration for Health Workers on Bawean Island

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ABSTRACT:
Background - Maternal emergencies encompass a wide range of conditions that can endanger the lives of pregnant women or newborns, so the speed and availability of quality care is crucial in saving the lives of mothers and babies, especially in remote areas such as Bawean Island.
Objective - Capacity building for maternal emergency services is a strategic step aimed at improving the ability and efficiency of the health care system to handle emergency situations related to pregnancy and childbirth.
Design / methodology / approach - The method used in capacity building is training on the ability to conduct interprofessional collaboration among health workers with lecture, discussion and simulation methods with the use of LTHF simulators so that it is expected that during capacity building activities, participants can experience conditions that resemble real life. This capacity building activity consists of: Providing refreshing material related to maternal emergencies and simulating interprofessional collaboration using the LTHF simulator.
Findings - Training participants stated that the above training method was very interesting and provided new experiences to prepare themselves in handling maternal neonatal emergencies that can occur at any time. The increased capacity to manage maternal neonatal emergencies can improve the effectiveness of medical actions and case management in emergency situations involving maternal health during pregnancy, childbirth, or the postpartum period after the training. Maternal neonatal emergencies that are often found are heavy bleeding, eclampsia, infection, asphyxia or other complications that can endanger the lives of pregnant women and their babies.
Conclusion - Increasing the capacity of maternal emergency services through the Low Tech High Fidelity (LTHF) Simulator method and Interprofessional Collaboration is a significant step to improve the quality of services and safety of pregnant women and newborns on the island of Bawean.

KEYWORDS: Maternal neonatal emergency; health worker training; Interprofessional Collaboration: LTHF Simulator

INTRODUCTION

Capacity building for maternal emergency services is a strategic step that aims to improve the ability and efficiency of the health care system to manage emergencies related to pregnancy and childbirth. Maternal emergencies encompass a range of conditions that can jeopardize the lives of pregnant women or newborns, so the speed and availability of quality care is crucial in saving the lives of mothers and babies (Thwala, Blaauw & Ssengooba, 2019; Oguntunde et al, 2018; Sevene et al, 2021).

Improving the capacity of maternal emergency services involves various aspects, ranging from improving the skills of medical personnel, improving health facility infrastructure, to optimizing the coordination system between health services. The aim is to ensure that every maternal emergency is treated quickly, appropriately and effectively, minimizing the risk of complications and fatalities (Ameh et al, 2019; Bhardwaj et al, 2018; Ofosu et al, 2021).

In addition, this capacity building also includes counseling and community involvement in supporting the prevention and management of maternal emergencies. Community awareness of danger signs, the importance of regular antenatal check-ups and quick access to health facilities can play a key role in reducing maternal mortality (Banke-Thomas et al, 2020; Moresky; 2019).

By taking a holistic and sustainable approach, improving the capacity of maternal emergency services can help achieve the World Health Organization's sustainable development goals in the health sector. Along with the development of science and technology,

the implementation of innovations in the health sector is also an integral part of this capacity building effort, ensuring that maternal emergency services can be continuously updated according to the latest standards.

The number of maternal deaths in Gresik in 2017 reached 13, of which 5 were from Bawean, namely from Sangkapura and Tambak sub-districts. The most common causes were pre-eclampsia, bleeding, and pregnancy under 20 years old. In 2020, Gresik Regency had 12 maternal deaths, ranked 23rd in East Java, while in 2021 Gresik Regency rose to the 4th highest death rate in East Java Province with 18 maternal deaths.

Bawean is one of the areas of Gresik Regency in the form of islands in the middle of the Indonesian sea, so that to access the location requires ship or aircraft transportation which currently only exists at certain times. This is a crucial problem for maternal health services, especially when emergency services are needed, so it is hoped that Bawean will have qualified health workers who are able to carry out the management of emergency problems and carry out screening so that they can make well-planned referrals to prevent maternal deaths. RSUD Umar Mas'ud is a hospital located on the island of Bawean that is a referral center, but to this day still faces obstacles in the availability of specialists and infrastructure that can provide adequate health services to the community, so it often still has to be referred to Ibnu Sina Hospital on the mainland, which requires a long travel time. Increasing the capacity of health workers in dealing with maternal/perinatal emergencies is important to improve the quality of service so that it can contribute to reducing MMR in Gresik District.

Improving the capacity of maternal emergency services is an important aspect of improving maternal and infant health. Maternal emergencies require a rapid and appropriate response to minimize the risk of complications that could endanger the lives of mothers and babies. In this context, the Low Tech High Fidelity (LTHF) simulator method and interprofessional collaboration play a key role in strengthening healthcare team skills and cooperation (Delawala, 2020; Nodari et al, 2021).

The LTHF simulator is a simulation approach that uses simple equipment but still provides an immersive learning experience. Utilizing low technology but high utility, health professionals are expected to train effectively in handling maternal emergency scenarios. The advantages of LTHF simulators involve the use of simple anatomical models, mannequins, or training equipment at an affordable cost, which can be accessed by various healthcare facilities (Lovo Grona, 2018; Lucien-Rodriguez, 2020).

In addition, interprofessional collaboration is an important cornerstone in ensuring holistic and coordinated maternal emergency care (Rayburn & Jenkins, 2021; Vedam, 2019; Stratmann, 2023). This collaboration involves various health professionals such as doctors, midwives, nurses, and other health workers, working together to provide a rapid and coordinated response. Through interprofessional collaboration, the healthcare team can understand each other's roles, communicate effectively, and optimize available resources (Schnable, 2023; Soko, 2021; Silbert-Flagg, 2022; Smith, 2022).

The application of the LTHF simulator method and interprofessional collaboration not only improves individual technical skills, but also strengthens the team's ability to deal with emergency situations. By involving various professions in exercises and simulations, health teams can overcome complex challenges that may arise during maternal emergencies (Dahlen et al, 2023; Susilo, Riskiyana, Lestari & Yanti. 2022).

Thus, the use of the LTHF simulator method and interprofessional collaboration may be an effective strategy in improving the capacity of maternal emergency services. By providing realistic training and involving various members of the healthcare team, it is expected that maternal emergency services can be significantly improved, reducing the risk of complications and improving the safety and health of mothers and babies.

METHOD OF IMPLEMENTATION

This capacity building activity consists of preparatory coordination, preliminary survey to determine the current field conditions, data analysis, training implementation, monitoring and evaluation of activities, data processing and reporting and scientific publications.

1. Preparatory coordination. This preparatory meeting was held with the Gresik Health Office, to coordinate the implementation because it involved health workers both ASN and Private. Dinkes Gresik facilitated this meeting in the form of a meeting room and invited stakeholders related to the implementation of community service activities.
2. Preliminary survey. Conducted to determine the level of knowledge and experience of maternal/perinatal emergency services that have been carried out before training. The aim is to provide input for presenters and facilitators to organize effective capacity building training for maternal/perinatal emergency services.
3. Data analysis of the survey results was used as reference material for discussions with stakeholders, in order to form a common understanding of the real problems in the field, presented during the evaluation of the implementation of activities.
4. Socialization meeting of survey results and training plan for maternal emergency service capacity using Low Tech High Fidelity (LTHF) simulator method and interprofessional collaboration for midwives on Bawean Island with cross-sectors.
5. Capacity building training: consists of providing materials, making simulation scenarios, simulation implementation and RTL. The training was conducted at Umar Mas'ud Hospital in Bawean, Gresik. Training equipment for setting up the emergency situation

during the simulation was prepared by RSUD Umar Mas'ud Bawean. The training participants consisted of doctors, nurses and midwives from Umar Mas'ud Gresik Hospital and Primary Health Care Facilities on Bawean Island.

- Pre test and post test facilitated by Unair team.
- The material was given by obgyn and pediatric specialists related to maternal / perinatal emergencies from Umar Mas'ud Hospital.
- Scenario development was conducted together with participants facilitated by the Airlangga team.
- Simulation: simulation of maternal and neonatal emergencies that will be facilitated by the Unair team with all training participants.

6. Activity evaluation monitoring, to see the impact of the training for health workers who have been trained. The evaluation meeting will be attended by relevant stakeholders and is planned to be held at the Gresik Health Office.

RESULT

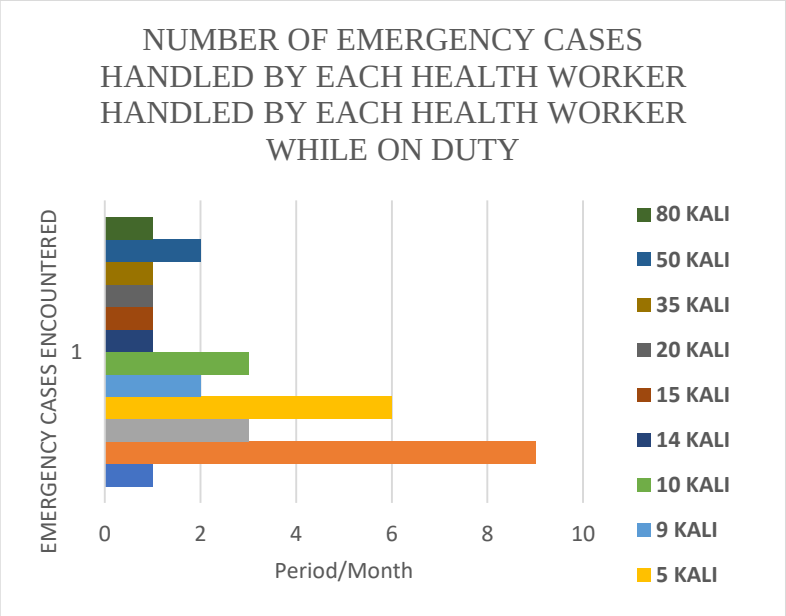
Maternal emergencies are medical emergencies that occur in pregnant, birthing, or postpartum women, which can be life-threatening to the mother. These conditions can be caused by a variety of factors, including complications of pregnancy, childbirth, or maternal health problems that arise during the birthing process.

Maternal emergencies are a serious health concern, as maternal mortality remains a significant global problem, especially in developing countries. Although there has been increased awareness and efforts to reduce maternal mortality, challenges remain, especially in access to adequate health care and rapid response in emergency situations.

Some of the common causes of maternal emergencies include severe bleeding, eclampsia or preeclampsia, infection, placental abnormalities, and organ failure problems such as heart failure or kidney failure. Early detection, careful monitoring during pregnancy, and prompt access to quality medical care are key to preventing and managing maternal emergencies.

The role of the healthcare system, public health education, and support at the local and global levels is critical in addressing maternal emergencies. Preventive measures, such as routine pregnancy monitoring, counseling pregnant women, and improved accessibility to health services, can help reduce the incidence of maternal emergencies and improve overall maternal health.

Below is the data on maternal emergency case findings on the island of bawean:



Description:

The above picture shows the types of emergency cases that have been encountered in the following order:

1. Hemorrhagic Post Partum (HPP) experienced 80 cases.
2. Eclampsia experienced 50 cases.
3. Severe Preaclampsia had 35 cases.
4. Letsu had 20 cases.
5. Asphyxia had 15 cases.
6. Placenta Previa had 14 cases
7. Placenta Accreta had 10 cases.
8. Placental Retention had 9 cases.

9. Early rupture of membranes had 5 cases.
10. Old Partus had 3 cases.
11. Gemeli with Bblr had 2 cases.
12. Umbilical Cord Twist had 1 case.

Based on the above results, it is necessary to conduct training on handling maternal emergencies, especially for the highest case, namely HPP, to improve the ability to handle emergencies that can occur at any time. Other maternal emergencies include various serious conditions such as eclampsia, infection, or other complications that can endanger the lives of pregnant women. Maternal emergencies will also have an impact on the safety of the baby in the mother's womb, from the graph, it can be seen that the largest neonatal emergency case is asphyxia with 15 cases. Furthermore, evaluating the management of maternal emergencies is an important part of ensuring that care is provided in accordance with the latest medical standards, safety protocols and best practices. The aim of this activity is to improve the quality of maternal health care, reduce the risk of complications, and ensure the safety and well-being of the mother and baby in the process of birth.

Collaboration between frontline emergency teams is the next key to success in managing maternal emergencies. Some aspects that need to be evaluated in the management of maternal emergency cases include:

1. Response Time: Evaluate how quickly the medical team responds to maternal emergencies. Speed of response can play an important role in reducing the risk of complications.
2. Initial Screening and Diagnosis: Assess the accuracy and precision of the initial examination and diagnosis of the maternal emergency. This step ensures that the problem is correctly identified so that treatment can be initiated appropriately.
3. Treatment and Management Plan: Review the treatment plan implemented to manage the maternal emergency. This includes therapy selection, use of medications, and other medical procedures.
4. Medical Team Coordination: Evaluate the coordination among the medical team members involved in case management. Good cooperation can speed up the response and improve the effectiveness of treatment.
5. Continuous Monitoring and Evaluation: Ensure that continuous monitoring is conducted throughout the maternal emergency case management process. Continuous evaluation is required to adjust the treatment strategy according to the patient's condition.

Maternal emergency case management training helps build a knowledge base and continuous learning for health practitioners, allowing them to continuously improve their skills and knowledge in responding quickly and effectively to maternal emergencies that require special attention.

DISCUSSION

Improving the capacity of staff in managing maternal emergencies is a critical step in improving the quality of maternal health services. An interprofessional collaboration approach supported by a Low-Fidelity Human Factors (LTHF) simulator is one strategy that is appreciated as an effective tool. Previous research and practice has shown that integrating the expertise of different health professionals can improve responses to maternal emergencies.

Interprofessional collaboration (IPC) involves various health professionals, such as doctors, midwives, nurses, and other health workers, working together to provide holistic and coordinated care. This collaborative management of maternal emergencies is expected to optimize resource utilization and improve interprofessional communication, both of which are crucial to saving the lives of mothers and babies.

The LTHF simulator is an important tool in interprofessional skill development. It creates a training environment that approximates real emergency situations without the use of advanced technology, allowing the healthcare team to practice intensively without risk to the patient. By engaging interprofessional teams in training scenarios using the LTHF simulator, professionals can improve their technical and communicative skills and learn to work effectively together in emergencies.

Training in maternal emergency case management with an interprofessional collaboration approach and the use of the LTHF simulator can be done through various parameters, including improved team skills in identifying, evaluating and managing emergency situations, improved interprofessional communication, and increased individual confidence in contributing to the team.

An interprofessional approach using LTHF simulation provides an opportunity for various health professionals to work together to address maternal emergencies. A strong theoretical foundation can provide a deep understanding of team performance, identify areas of improvement, and improve team readiness to deal with similar cases in the real world. The integration of interprofessional collaboration and the use of the LTHF simulator in the management of maternal emergencies can be a significant step in improving patient safety and the overall quality of maternal healthcare.

Based on the information provided, it can be concluded that managing maternal emergencies through an interprofessional collaboration approach using the LTHF (Low-Technology, High-Fidelity) simulator has several advantages and benefits. The following are some of the conclusions that can be drawn:

1. Improved Skills and Confidence: The use of LTHF simulators allows interprofessional teams to practice skills and build confidence in managing maternal emergencies. Realistic simulations can help health professionals respond effectively and efficiently.
2. Effective Team Collaboration: Involving various health professionals in simulations enhances team collaboration. Interactions between doctors, nurses, midwives and other health professionals can be enhanced, thus improving communication and coordination in the management of emergency cases.
3. Risk Identification and Improved Patient Safety: Simulation allows identification of potential risks and errors in the management of maternal emergency cases. Thus, preventive measures can be taken that can improve overall patient safety.
4. Improved Team Knowledge: Involving the interprofessional team in simulation can improve each team member's understanding of their roles and responsibilities in maternal emergency case management. This can improve individual knowledge and skills that contribute to better case management.
5. System Evaluation and Improvement: Simulation can be used as an evaluation tool to assess the effectiveness of emergency case management protocols and procedures. The results of the evaluation can be used to make improvements in the healthcare system and enhance the response to similar cases in the future.
6. Time and Cost Efficiency: The use of LTHF simulators can provide a realistic experience without requiring significant resources. This can save time and costs in training, while still providing substantial benefits in improving team skills..

However, it is important to note that successful implementation of the LTHF simulation in interprofessional management of maternal emergencies also depends on institutional support, facilities, and commitment from the entire healthcare team. Continuous evaluation and adjustments to training methods are also essential to ensure long-term suitability and effectiveness.

CONCLUSION

Increasing the capacity of maternal emergency services through Low Tech High Fidelity (LTHF) Simulator and Interprofessional Collaboration is a significant step towards improving the quality of care and safety of pregnant women and newborns. The use of LTHF simulator has proven its effectiveness in simulating maternal emergency scenarios. Through this simulation, healthcare professionals can practice intensively and realistically, gaining risk-free clinical experience on real patients. Participation in the LTHF simulation can improve health workers' skills and confidence in managing maternal emergencies. With intensive practice, they can hone technical and non-technical skills that are critical in emergency situations.

Interprofessional collaboration is key in managing maternal emergencies. Involving different types of health professionals such as doctors, nurses, midwives, and other medical personnel in the simulation creates a better understanding of each other's roles, improves communication, and strengthens teamwork. Improved skills and coordination through LTHF simulation and interprofessional collaboration are expected to improve patient safety in maternal emergencies. Improved team response is needed to reduce the risk of adverse events and improve clinical outcomes.

The importance of continuous training using simulation and interprofessional collaboration methods should not be overlooked. Health professionals need to constantly attend regular training to maintain and improve their skills and expertise.

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