

DEVELOPMENT OF STUDENT EMERGENCY AND DISASTER RESPONSE TEAM THROUGH NURSING MANAGEMENT PRINCIPLES AND SIMULATION-BASED EDUCATION AT SMKN 6 PADANG

Nicen Suherlin¹, Rikayoni², Mariza Elsi³

^{1,2,3} Academy of Nursing Baiturrahmah, Indonesia

ABSTRACT

Natural hazards and emergency events in educational settings require effective preparedness strategies involving students as active members of the school safety system. Padang City is one of the regions in Indonesia with a high risk of earthquake and tsunami disasters, requiring continuous efforts to strengthen disaster preparedness at the school level. However, students in vocational schools still have limited knowledge, practical skills, and structured roles in responding to emergency situations.

This community service program aimed to develop a Student Emergency and Disaster Response Team through nursing management principles and simulation-based education at SMKN 6 Padang. The program applied the Planning, Organizing, Actuating, and Controlling (POAC) framework through needs assessment, emergency response team formation, educational sessions, practical training, disaster simulation, and competency evaluation. A total of 36 students from the Culinary Arts program participated in the activity. Training materials included Basic Life Support (BLS), Hands Only Cardiopulmonary Resuscitation (CPR), first aid management, bleeding control, injury management, evacuation procedures, and school disaster preparedness.

The evaluation showed an improvement in students' knowledge and emergency response skills after participating in the program. Students demonstrated increased understanding of emergency management concepts and improved ability to perform basic emergency response procedures through simulation activities. The program successfully established a Student Emergency and Disaster Response Team consisting of trained students with defined responsibilities in first aid assistance, evacuation support, safety monitoring, communication, and logistics management.

The integration of nursing management principles with simulation-based education is an effective approach to strengthening school-based disaster preparedness. This program provides a sustainable model for developing student capacity as first responders and supporting a safer educational environment, particularly in disaster-prone areas

Keywords: Disaster Nursing; Emergency Response Team; School Preparedness; Simulation Education; Basic Life Support

INTRODUCTION

Educational institutions located in active tectonic regions require effective preparedness strategies and structured emergency response systems to ensure the safety of students and school communities during disasters. Indonesia is one of the countries with a high level of disaster risk due to its geographical position at the convergence of three major tectonic plates. Padang City, West Sumatra, is recognized as an area with significant earthquake and tsunami risk, requiring continuous efforts to strengthen disaster preparedness and community resilience (Amri et al., 2022).

Vocational high schools (Sekolah Menengah Kejuruan/SMK) have unique challenges related to emergency preparedness because learning activities involve practical environments, workshops, electrical equipment, machinery, and other potential hazards. SMKN 6 Padang, as a vocational education institution, requires an integrated emergency response mechanism to support rapid decision-making, first aid delivery, evacuation processes, and coordination among school members during emergency situations.

From a nursing management perspective, strengthening disaster resilience requires more than providing basic first aid knowledge. It involves the application of management principles, including planning, organizing, leadership, coordination, and evaluation to establish an effective and sustainable emergency response system (Veenema, 2018). The integration of nursing management principles into disaster preparedness programs enables organizations to develop clear roles, improve teamwork, and enhance the capacity of individuals to respond effectively during emergencies.

Conventional safety education programs often focus primarily on knowledge transfer and individual skills but may not adequately address organizational readiness, leadership structures, communication systems, and coordinated response mechanisms during disasters (World Health Organization [WHO], 2020). Therefore, adapting disaster management concepts from healthcare settings, such as Hospital Disaster Plans (HDP), into school-based disaster

preparedness frameworks can provide a structured approach for developing student emergency response teams (Nisaa & Modjo, 2024).

Simulation-based education is an effective strategy for improving emergency preparedness because it provides experiential learning opportunities that allow participants to practice decision-making, teamwork, communication, and emergency response skills in realistic scenarios (Puspitawaty et al., 2025). Through the application of nursing management approaches, students can be empowered as trained first responders who contribute to creating a safer and more resilient school environment.

Therefore, this community service program aimed to develop a Student Emergency and Disaster Response Team at SMKN 6 Padang through the implementation of nursing management principles and simulation-based education. The program focused on strengthening student preparedness, improving emergency response skills, and establishing a sustainable school-based disaster response system.

Analysis Problem

Based on preliminary observations, environmental assessments, and focus group discussions with school administrators, teachers, and student representatives at SMKN 6 Padang, several key challenges related to school emergency preparedness were identified:

1. Absence of a Structured Student Emergency Response System

SMKN 6 Padang currently does not have a structured student emergency response team with clearly defined roles and responsibilities. The absence of an organized response structure may limit effective coordination during emergency situations, particularly during the initial response phase of evacuation, first aid provision, and communication management.

2. Limited Availability of Standardized Emergency Response Guidelines

The school does not yet have specific educational materials, practical guidelines, or student-oriented emergency response procedures related to first aid, Basic Life Support (BLS), and disaster evacuation. This

condition may affect students' confidence and readiness when required to respond to emergency situations.

3. Limited Simulation-Based Evaluation and Preparedness Monitoring

Routine disaster response simulations and structured evaluation mechanisms have not been optimally implemented. Consequently, opportunities to assess students' practical skills, teamwork, communication, and decision-making abilities during emergency scenarios remain limited.

Problem Solution

To address these challenges, this community service program implemented an intervention based on **nursing management principles using the POAC framework (Planning, Organizing, Actuating, and Controlling)** to strengthen school-based disaster preparedness.

1. Planning: Development of School Emergency Preparedness Framework

The program began with collaborative planning involving the community service team and school stakeholders to identify needs, develop educational materials, and prepare emergency response guidelines related to Basic Life Support, first aid, and disaster evacuation procedures.

2. Organizing: Establishment of Student Emergency and Disaster Response Team

A Student Emergency and Disaster Response Team consisting of **31 selected students** was established. The team was organized with clearly defined responsibilities, including first aid assistance, evacuation support, logistics coordination, safety monitoring, and communication during emergency simulations. This organizational approach aimed to strengthen teamwork, leadership capacity, and coordination among students.

3. Actuating: Simulation-Based Education and Skill Development

The implementation phase included interactive education, demonstrations, hands-on practice, and scenario-based disaster simulations. Students received training on Basic Life Support (BLS), Hands Only CPR, bleeding management, simple injury management, evacuation procedures, and emergency communication. Simulation activities were conducted to provide experiential learning and improve students'

confidence in responding to emergency situations.

4. Controlling: Evaluation of Knowledge and Practical Skills

Program evaluation was conducted through pre-test and post-test assessments and structured observation of students' practical performance during simulation activities. Evaluation indicators included understanding of emergency concepts, CPR performance, first aid skills, evacuation procedures, teamwork, and communication effectiveness. The evaluation results were used to identify areas for improvement and support future school preparedness programs.

Method Implementation and Evaluation

The implementation strategy was developed using the Nursing Management framework based on the POAC approach (Planning, Organizing, Actuating, and Controlling). The program consisted of four sequential stages: needs assessment and planning, team organization, simulation-based training implementation, and evaluation of students' emergency response competencies.

A total of **31 students from SMKN 6 Padang** were selected as participants and involved in the establishment of the Student Emergency and Disaster Response Team. Students were assigned specific responsibilities related to first aid support, evacuation assistance, safety monitoring, logistics coordination, and communication during emergency simulations.

Table 1. Characteristics of Student Participants

Characteri stic	Catego ry	Frequen cy (f)	Percenta ge (%)
Age	15 years old	22	16.1
	16 years old	14	38.9
Gender	Male	8	22.2
	Female	28	77.8
Class	CU 2	36	100
Department	Culinay	36	100

Table 2. Student Emergency Response

Team Structure

Team Function	Number of Student	Main Responsibility
Team coordinator	1	Coordinates emergency response activities, communication, and team mobilization during emergency simulations
First Aid Team	12	Provides basic emergency assistance, Basic Life Support (BLS), first aid management, and initial victim stabilization
Evacuation Team	10	Supports safe evacuation procedures, guides students to assembly points, and assists movement of affected individuals
Safety and Communication Team	7	Monitors safety conditions, maintains communication flow, and supports coordination during emergency
Logistics & Transport	6	Prepares emergency equipment, ensures availability of supporting resources, and manages response supplies
Total	36	

Simulation-Based Training Implementation

The disaster simulation was conducted using an earthquake emergency scenario followed by evacuation and first aid response activities. The simulation consisted of several stages:

- 1. Emergency Alert Phase**
Students practiced the Drop, Cover, and Hold On procedure when an earthquake warning was activated.
- 2. Evacuation Phase**
The student response team guided participants to designated safe assembly areas while maintaining communication and safety procedures.
- 3. First Aid Response Phase**
Students practiced Basic Life Support (BLS), Hands Only CPR, bleeding management, and management of simple injuries under instructor supervision.
- 4. Evaluation and Debriefing Phase**
Following the simulation, facilitators conducted discussions and feedback sessions to identify strengths and areas requiring improvement.

Evaluation Results

Input Evaluation

The input evaluation assessed the availability of human resources, learning facilities, and supporting equipment required for program implementation. The assessment identified that SMKN 6 Padang required strengthening of student emergency preparedness, particularly related to first aid skills, disaster evacuation procedures, and emergency team coordination.

The program preparation included coordination with school administrators, development of educational materials, preparation of CPR mannequins, first aid equipment, simulation scenarios, and evaluation instruments.

Process Evaluation

During implementation, students actively participated in educational sessions, demonstrations, practical training, and disaster simulations. The learning process demonstrated increased student engagement in practicing emergency response procedures.

Students were able to perform assigned roles within the emergency response team, including assisting evacuation processes, providing basic first aid, and communicating

during simulation activities. The simulation approach encouraged teamwork, leadership development, and confidence in responding to emergency situations.

Result Evaluation

Evaluation of program outcomes was conducted through knowledge assessment and observation of practical skills. The results showed improvement in students' understanding of emergency preparedness, Basic Life Support, first aid management, and disaster response procedures.

The establishment of the Student Emergency and Disaster Response Team represented an important outcome of the program by providing a structured mechanism for continued disaster preparedness activities at SMKN 6 Padang.

Discussion

The implementation of nursing management principles through the POAC framework demonstrated the importance of structured management approaches in strengthening school disaster preparedness. Disaster response requires not only individual knowledge but also effective coordination, role assignment, leadership, and teamwork to ensure an organized response during emergency situations (Veenema, 2018).

Simulation-based education provides experiential learning opportunities that allow students to practice emergency response skills in realistic situations. Previous studies have demonstrated that simulation training improves knowledge retention, confidence, teamwork, and preparedness among learners involved in disaster response programs (Kaji et al., 2011; WHO, 2020).

The development of a Student Emergency and Disaster Response Team at SMKN 6 Padang supports the concept of school-based disaster risk reduction by empowering students as active participants in creating safer educational environments. This approach aligns with disaster preparedness frameworks emphasizing community participation, capacity building, and sustainable preparedness strategies (UNDRR, 2019).

Through the integration of nursing management principles and simulation-based training, this community service program provides a practical model for improving

emergency preparedness among vocational school students, particularly in disaster-prone areas.

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