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Research Article

Perceptions of Health Professions Students in the Implementation of Interprofessional Education in Disaster Simulation in Syiah Kuala University

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Abstract: Indonesia's high disaster risk needs health professionals equipped with strong interprofessional collaboration skills in disaster management. Interprofessional Education (IPE) through disaster response simulations is a strategic approach to enhance collaborative competencies among health sciences students. This study aims to explore health sciences students' perceptions of IPE implementation during disaster response simulations at Syiah Kuala University and its impact on developing collaborative competencies. A qualitative descriptive design was employed. Participants included students from medical, nursing, psychology and dentistry study programs who participated in the disaster response simulation. Data were collected using in-depth interviews, and observation before, during and after the simulation. Findings revealed positive perceptions toward IPE implementation through simulation, which effectively improved understanding of professional roles, communication skills, team coordination, and disaster preparedness. Key facilitators included realistic scenarios, experienced facilitators, and reflective debriefing sessions. Challenges identified were differences in professional backgrounds, confusion in simulation role and limited simulation time. In conclusion, practical integration via disaster response simulation significantly enhances collaborative competencies among health sciences students.

Keywords: Interprofessional Education; Disaster Simulation; Health Student

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1. Introduction

Indonesia is a disaster-prone country, with 3,472 disasters occurring in 2024. (BNPB, 2025) In the past 20 years, Indonesia has experienced numerous major disasters, including the 2004 Aceh tsunami, the 2006 Yogyakarta earthquake, the 2010 West Sumatra earthquake, the 2010 Mount Merapi eruption, the 2014 Mount Kelud eruption, the 2018 Palu and Donggala earthquake, the 2018 Sunda Strait tsunami, and the 2023 Cianjur earthquake. These disasters caused significant damage and losses, including loss of life, property, and damage to public facilities such as hospitals and community health centers.

The Health Crisis Center, in its 2020-2024 Action Plan, recorded 2,969 disasters, 445 of which resulted in health crises. A health crisis can be defined as an event that results in at least 50 deaths, serious injuries, minor injuries, or displacement, and damage to health facilities. In 2019, a health crisis occurred in 34 provinces and 236 districts/cities. This incident resulted in 796 deaths, 2,486 serious injuries/hospitalization, 1,240,613 minor injuries/outpatient treatment, 465,306 displacement, and 251 damaged health facilities (Kemenkes, 2022).

These recurrent disasters pose significant challenges to the national health system, demanding rapid, coordinated, and effective responses from various health professionals. The complexity and unpredictability of disaster situations require not only technical expertise but

also seamless collaboration among multidisciplinary teams to ensure optimal patient care and resource management.

In this context, Interprofessional Education (IPE) has emerged as a pivotal approach in preparing future health professionals to work collaboratively across disciplines. Interprofessional Education (IPE) has emerged as a crucial approach to prepare health professional students to work collaboratively across disciplines. IPE is defined by the World Health Organization (2010) as a process where students from two or more professions learn with, from, and about each other to improve collaboration and health outcomes. Early integration of IPE in health education fosters mutual understanding of roles, enhances communication skills, and builds teamwork competencies essential for disaster response (Tambuwun et al., 2022)

Disaster management involves multiple phases—mitigation, preparedness, response, and recovery—that require seamless interprofessional collaboration. However, health professional education in Indonesia is still developing structured IPE programs, and many students lack practical experience working in multidisciplinary teams during disaster scenarios (Kusumawati, 2015). Simulation-based learning, such as the Tabletop Exercise (TTX), has proven effective in bridging this gap by providing realistic, active learning environments where students can practice collaborative skills in disaster contexts (Maryana et al., 2024)

Previous studies have demonstrated that IPE combined with simulation significantly improves students' collaborative abilities, knowledge, and readiness for disaster response (Tambuwun et al., 2022; Sembodo, 2023). For example, a study at FIKES UPN Veteran Jakarta found a significant relationship between IPE implementation and improved collaboration among health students during disaster emergency simulations ($p=0.005$) (Sembodo, 2023). Similarly, research at Poltekkes Kemenkes Yogyakarta showed that TDE-based IPE interventions increased students' readiness and knowledge significantly ($p=0.000$) (Maryana et al., 2024).

Despite these advances, challenges remain in fully integrating IPE into curricula and providing sufficient practical experiences for students. Addressing these challenges is vital to develop health professionals who are competent, adaptive, and collaborative in disaster management.

This study aims to explore health sciences students' perceptions of IPE implementation during disaster response simulations at Syiah Kuala University, focusing on how such experiential learning influences their collaborative competencies and preparedness for real-world disaster scenarios.

2. Literature Review

Interprofessional Education (IPE) is a pedagogical approach where students from two or more health professions learn with, from, and about each other to foster collaborative practice and improve the quality of healthcare delivery. IPE is a key strategy to build effective health systems by enhancing teamwork and communication among healthcare providers. In the context of disaster management, IPE prepares students to understand the roles, responsibilities, and perspectives of different professions, which is essential for coordinated and efficient emergency response (Tambuwun et al., 2022). IPE is increasingly recognized as essential because modern patient care often involves complex needs requiring coordinated efforts from multiple health professionals, such as doctors, nurses, pharmacists, and allied health workers.

Interprofessional Education (IPE) is increasingly recognized as a fundamental approach in preparing health professionals to collaborate effectively, especially in complex and high-stakes contexts such as disaster response. The implementation of IPE in disaster management training equips students from diverse health disciplines with the essential skills to work cohesively in emergency situations, improving both preparedness and patient outcomes. Interprofessional Education (IPE) is a critical pedagogical approach that prepares healthcare students to collaborate effectively in complex, real-world scenarios, such as natural disasters

2.1. Disaster Simulation

Disaster simulation is an experiential learning method that replicates real-life emergency scenarios to train students in disaster preparedness, response, and recovery. Simulations provide a safe environment for students to practice technical skills, decision-making, and teamwork under pressure. There are various Disaster simulations, such as Table Top Exercise, self-evacuation simulation and full-scale disaster simulation.

Disaster simulation in education is a dynamic, experiential learning method designed to prepare healthcare students and professionals to respond effectively to emergency situations such as natural disasters, mass casualty incidents (MCIs), and other crises. This educational approach replicates real-life disaster scenarios in a controlled, safe environment, allowing learners to practice and refine critical skills, including triage, communication, teamwork, decision-making, and incident management without risk to actual patients.

Disaster simulation has emerged as a critical pedagogical tool across various educational domains, particularly in healthcare, emergency management, and public safety training. These experiential learning exercises replicate real-world crisis scenarios to enhance preparedness, improve decision-making, and foster interprofessional collaboration (Alinier et al., 2014). With increasing global threats from natural disasters, pandemics, and human-made crises, simulation-based disaster education has become essential for developing competent responders.

The disaster simulations demonstrate significant benefits in disaster education and preparedness. The benefits are improved knowledge and skill in disaster response and preparedness, improving team coordination in disaster management, and psychological preparedness during emergency situations

2.2 Interprofessional Education in Disaster Simulation

Interprofessional education (IPE) for health students in disaster management is crucial for fostering collaborative skills necessary for effective disaster response. Various studies highlight the benefits of IPE in enhancing communication, teamwork, and practical competencies among health professionals. This educational approach prepares students to navigate complex disaster scenarios, ultimately improving health outcomes during emergencies.

Combining IPE with disaster simulation creates a powerful educational approach that promotes collaborative competencies in realistic emergency contexts. This integration allows students from different health professions to engage actively in joint problem-solving, communication, and coordinated decision-making during simulated disasters (Tambuwun et al., 2022; Sembodo, 2023).

Research in Indonesia indicates that IPE embedded in disaster simulations improves students' understanding of interprofessional roles and enhances collaborative behaviors. Disaster simulations effectively increased students' readiness and collaboration skills. Moreover, studies highlight that reflective debriefing sessions following simulations are critical for reinforcing learning and addressing interprofessional challenges (Sembodo, 2023).

Integrating IPE in Health student enhace collaboration because IPE promotes understanding of different professional roles, which is vital during disaster response(Innis et al., 2021). IPE will also help in improving communication skills among students and it is essential for coordination in emergency situations (Brown et al., 2022).

3. Method

This research uses a qualitative descriptive analysis approach to explore the student perceptions of the implementation of Interprofessional Education in Disaster Management. The participant in the research is students from the health profession faculty Universitas Syiah Kuala from four different Study Program they are : Medical Doctor Study Program, Psychology Study Program, Nursing Study Program and Dentistry Study Program. The research conducted in August – November 2022.

3.1. Data Source and Collection

The data used in this study is primary data collected using research instruments in the form of interview guides and observation guides. Data collection was carried out from the planning stage, during, and after the disaster simulation. Respondents in this study were taken using purposive sampling techniques that represent students from each study program. Data analysis is carried out by coding, categorizing, reducing and presenting descriptive data.

4. Results and Discussion

Disaster Day is a disaster response simulation activity as part of the Disaster Management and Forensics course.. This simulation activity was attended by health students at Syiah Kuala University. Participants were divided based on their roles: Incident Commander, Security, Logistics, Search and Rescue, Communications, Field Hospital, Triage, First Aid, Transportation and Evacuation, DVI, and Trauma Healing. The number of simulation participants in this activity can be seen in Table 1.

Table 1. Participant in Disaster Simulation

Study Program	Number
Medical Doctor	**257**
Nursing	**108**
Dentistry	**51**
Psichology	**40**
Total	**456**

The 2022 Disaster Day event was the first disaster simulation conducted using an interprofessional education concept, incorporating study programs across health disciplines into the simulation at Syiah Kuala University. It was also the first offline simulation event since the COVID-19 pandemic. In the simulation, students are given a scenario for the Disaster Response Process. The scenario used in this disaster simulation activity is an earthquake and tsunami scenario. In the simulation scenario, an earthquake and tsunami resulted in numerous casualties. These victims suffered serious injuries, moderate injuries, minor injuries, and even death. Students were required to carry out the simulation based on their assigned roles to respond to the disaster victims.

From simulation planning to implementation and evaluation, students are guided by their supervisors. The IPE-based simulations teach students how to collaborate with different professions in emergency situations. Disaster management cannot be carried out by a single profession but involves various parties, making the application of interprofessional principles crucial in disaster management.

In an earthquake and tsunami scenario with numerous casualties, students undergo a simulation process that begins with a disaster warning, followed by a briefing from the incident commander, who issues instructions for carrying out tasks according to their respective roles in the simulation.

This begins with searching for and rescuing disaster victims, followed by conducting triage in the field during the disaster and providing first aid to victims. This is followed by providing further treatment to disaster victims in a field hospital and how to refer them to the nearest health facility. Traumatized victims are also provided with psychological first aid, and the disaster victim identification process is concluded.

The simulation process follows the course material taught in class. Nursing students, for example, can demonstrate how to treat wounds on disaster victims, psychology students also

practice psychological first aid as taught in lectures. Medical students also play a role in establishing a field hospital and conducting triage, while dentistry students play a significant role in Disaster Victim Identification (DVI).

The implementation of the disaster simulation also involved various agencies in Aceh Province, including the Aceh Disaster Management Agency, the TNI and Basarnas to provide experience for students regarding cross-agency coordination in disaster management.

4.1. Student Perceptions in Interprofessional Education and Disaster Management

Students stated that the disaster simulation activity was a new and very memorable experience for them. Several stated that this was their first time collaborating with students from different professions. Student participants in the simulation demonstrated a greater understanding of the importance of cross-professional collaboration in disaster management after participating in the simulation. Throughout the simulation, from planning, implementation, and evaluation, students realized that each profession has a unique and complementary role in disaster management. The disaster management simulation process motivated students to understand the roles and contributions of different professions, thereby fostering trust and mutual respect within a team.

The implementation of Interprofessional Education (IPE) in disaster management among health sciences students is crucial for building effective and efficient cross-professional collaboration. A case study of a disaster response simulation at Syiah Kuala University demonstrated that simulation-based IPE provided real-life experiences that strengthened students' understanding of the roles of each profession in disaster management and improved teamwork skills. This finding aligns with research at the Faculty of Health Sciences, UPN Veteran Jakarta, which demonstrated a significant relationship between IPE implementation and increased collaboration among students in a disaster emergency response simulation (Simatupang, 2023). This also aligns with the research conducted in Universitas Gadjah Mada with the findings that Interprofessional education (IPE) in disaster management enhances communication and collaboration among health students from Medicine, Nursing, and Nutrition programs, improving their competencies in knowledge, clinical skills, and teamwork, essential for effective disaster response in Indonesia's disaster-prone context (Prihatiningsih et al, 2017)

Disaster response simulations provide students with real-life experiences working in multidisciplinary teams. Many participants stated that they felt more confident in communicating and making decisions together. The post-simulation debriefing session provides a crucial opportunity to reflect on team dynamics, identify communication barriers, and develop collaborative solutions.

Simulation-based IPE has proven effective in building collaborative competencies, communication, and shared decision-making. Students recommend that similar activities be conducted regularly and become an integral part of the health education curriculum. This is believed to prepare healthcare workers to be better prepared to face future disaster challenges collaboratively.

4.2. Challenges of Implementing Interprofessional Education in Disaster Management

The benefits of implementing Interprofessional Education in disaster management learning are clear, but the implementation of Interprofessional Education (IPE) in education at Syiah Kuala University, particularly in the health study program, still faces several challenges. Interprofessional Education at Syiah Kuala University began in 2020, but due to the COVID-19 pandemic, which forced online learning activities, implementation was less than optimal.

The challenges faced in implementing IPE in disaster simulations were the differing schedules of students from various study programs, leading to various miscommunications during the

planning process. Students also stated that this was their first experience with cross-professional coordination, resulting in various communication barriers.

The results of this study emphasize the need for systematic and sustainable integration of IPE into the health education curriculum, particularly in disaster management. The development of realistic and interactive simulation-based learning modules should be a priority so that students can internalize collaborative competencies early on. Educational institution policies should support the implementation of IPE by providing adequate resources, time, and facilities. The government and relevant institutions can also encourage the implementation of IPE as part of a national strategy to build the capacity of resilient healthcare workers in the face of disasters.

4.3. Impact in Student's Preparedness in Disaster Response

The results of interviews with students showed an increase in knowledge in dealing with disasters.. Students participating in the IPE simulation demonstrated improved mental and technical preparedness in dealing with emergency disaster situations. They were better able to coordinate and make decisions collectively, which is crucial in the complex and dynamic context of disaster management. This aligns with disaster management principles that emphasize the importance of synergy between various health professions in mitigation, preparedness, response, and recovery.

Disaster simulations can enhance students' understanding of the roles of various professions in disaster management. Students also expressed the opinion that the simulations provided a better understanding of their roles in emergency situations, although some students also expressed confusion about how to perform their roles in the simulations. One psychology student expressed confusion in providing psychological first aid due to the chaotic conditions and the large number of victims, which deemed psychological first aid less than optimal.

The study confirms that simulation-based IPE effectively cultivates collaborative competencies among health sciences students. Experiential learning in realistic disaster scenarios fosters mutual respect, clarifies professional roles, and enhances team communication and decision-making skills. However, to maximize benefits, challenges such as curriculum integration, time constraints, and interprofessional knowledge gaps must be addressed. Institutional support and faculty development are critical to sustaining effective IPE programs.

5. Conclusions

The implementation of Interprofessional Education (IPE) in the context of disaster management through emergency response simulations among health science students has proven effective in enhancing collaborative competency. The integration of practical aspects into the simulations provides real-world experiences that strengthen technical skills, communication, team coordination, and decision-making abilities in emergency situations. Students gain a better understanding of the roles and responsibilities of each profession, enabling them to work synergistically in multidisciplinary teams.

However, challenges such as differences in knowledge backgrounds between professions and limited time for simulations need to be addressed through careful planning and structural integration of IPE into the health education curriculum. Support from competent institutions and facilitators is crucial to optimize the benefits of simulations as a collaborative learning medium.

Overall, IPE based on emergency response simulations is an effective learning strategy for preparing adaptive, communicative, and collaborative healthcare workers to face future disaster management challenges. Therefore, the continued development and implementation of IPE programs is highly recommended to improve the quality of education and the preparedness of healthcare workers in Indonesia.

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