Five Phases Cycles in Emergency Preparedness and Response Plan (EPRP) s An Emergency Management For Campus Environment

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ABSTRACT

The Emergency Preparedness and Response Plan (EPRP) represent an important framework for effectively managing a variety of emergencies, particularly on higher education institution (HEI) campuses. This paper explores the importance of an EPRP in managing emergencies in higher education institutions (HEIs) effectively through the five-phase cycle of the EPRP. The five-phase cycle addresses and mitigates sustainability-related emergencies, including natural disasters, human-made disasters, environmental hazards, and infrastructure failures. HEIs are encouraged to develop an EPRP manual and procedure as essential components within their safety management systems. This paper aims to optimize the EPRP's readiness to handle emergencies and its active involvement through the five-phase cycle set out in the manual and procedures for implementing the EPRP as part of the emergency management strategy on campus. The analytical study and article content analysis are used to evaluate the function of the EPRP in their safety management system. This coordinated approach aims to minimize environmental damage, support the well-being of the campus community, and uphold a steadfast commitment to long-term sustainability goals.

Keywords:
Emergency Preparedness Response Plan (EPRP),
Higher Education Institutions (HEI), Emergency
Management (EM), Safety Management System
(SMS)

1. Introduction

The Emergency Preparedness and Response Plan (EPRP) represent a vital framework for effectively managing a range of emergencies, particularly within the campuses of higher education institutions (HEI) [1]. These emergencies pose significant risks to employees in their workplace environments and play a crucial role in overall risk management [2]. This study introduces a five-phase cycle for EPRP implementation as part of an emergency management strategy within the

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campus safety management system, focusing on sustainability. The paper evaluates the campus's capacity to handle emergencies and its active involvement in emergency situations through established procedures and documentation, with the aim of optimizing emergency preparedness and response.

As an organizational recommendation, HEIs are encouraged to develop an EPRP manual and procedure, essential components within their safety management systems [2]. The proposed five-phase cycle addresses the gap and significant of study to mitigates sustainability-related emergencies, including natural disasters, environmental hazards, and infrastructure failures. Its primary objective is to safeguard the sustainable infrastructure of the campus, promote eco-friendly practices, and coordinate disaster preparedness and response efforts [3-7]. This coordinated approach aims to fill the gap to minimize environmental damage, support the well-being of the campus community, and uphold a steadfast commitment to long-term sustainability goals.

1.1 Emergency Preparedness and Response Plan (EPRP)

The Emergency Preparedness and Response Plan (EPRP) is a critical component of effective crisis management. According to *Renschler et al.,* [1], EPRP involves preparedness activities both before and after emergencies, crises, and disasters. These activities encompass developing comprehensive emergency, crisis, and disaster plans and providing training to employees, equipping them to handle natural or human-made disasters. *Kapucu et al.,* [8,9] and the United States Department of Homeland Security define emergency preparedness as a continuous cycle that includes planning (developing strategies and action plans), organizing (structuring resources and roles), training (ensuring personnel readiness), equipping (providing necessary tools), exercising (practicing response scenarios), evaluating (assessing effectiveness), and taking corrective action (improving coordination during incident response). *Kapucu et al.,* [10] view EPRP as a unique system and process designed to prepare responders and ensure effective organizational functioning during emergencies, emphasizing readiness and efficient operations.

Caymaz et al., [11] defines EPRP as a system, program, and documented action critical for mitigating negative impacts, especially in disaster-prone areas such as wildfires, power shutoffs, earthquakes, and flooding. The primary objectives of EPRP include establishing a structured process for rapid identification, notification, assembly, readiness, recovery, and deployment of responsible personnel, building owners, occupants, and partners in affected areas [12]. Additionally, EPRP reflects organizational values and ensures alignment with Occupational Safety and Health (OSH) policies, regulations, and standard operating procedures [13]. An Emergency Preparedness and Response Plan (EPRP) serve as a comprehensive guide to dealing with an emergency. It outlines procedures and action plans for responding effectively to various emergency situations. The EPRP provides general guidance to identify, prevent, minimize and manage injuries, accidents and risks to workers and communities [14]. Effective implementation of the EPRP drives employers' commitment to eliminate harm to affected people by providing a comprehensive framework to identify, prevent, minimize and respond to injuries, accidents and potential threats [9,15]. The EPRP aims to ensure the safety and well-being of employees and the wider community where EPRP is a living document that will be reviewed and updated as necessary at least once a year as per papers from previous study [16,17,18]. The key elements of the EPRP include:

Identification of Risks: The plan should detail various potential hazards and risks relevant to the organization and its operations. This may include natural disasters, industrial accidents, health emergencies, and other events that could pose a threat to personnel and stakeholders.

Preventive Measures: It outlines proactive measures and strategies aimed at preventing emergencies or reducing their likelihood. This could involve training programs, safety protocols, equipment maintenance schedules, and other initiatives designed to enhance preparedness and minimize risks.

Response Procedures: The plan delineates specific procedures and protocols to be followed in the event of an emergency or crisis. This includes actions to be taken to ensure the safety of personnel, coordination with emergency services, communication protocols, evacuation procedures, and steps for managing the immediate aftermath of an incident.

Continuous Improvement: Recognizing that risks and circumstances may change over time, the EPRP is described as a living document. Regular reviews and updates, at least once a year as specified, ensure that the plan remains relevant and effective in addressing evolving threats and vulnerabilities.

Stakeholder Engagement: Effective implementation of the EPRP requires commitment and collaboration from all levels of the organization, as well as engagement with relevant external stakeholders such as government agencies, emergency responders, and the local community.

By adhering to the principles and guidelines outlined in the EPRP, organizations can demonstrate a strong commitment to safety and emergency preparedness, fostering a culture of vigilance, responsibility, and resilience. This not only protects employees and community members from harm but also helps safeguard the organization's reputation, operations, and long-term sustainability.

1.2 Five Phases of Emergency Management

The concept of "phases" has been used to help describe, examine, and understand disasters and to help organize the practice of emergency management [11]. To ensure the effectiveness of EPRP in emergency management, campus organization typically involves a cyclical process that consists of five phases. According to *Kawasaki et al.,* [11] these phases provide a structured approach to prepare for, respond to, recover from, and mitigate the effects of emergencies or disasters. The five-phase cycle is one of the important tools in dealing with emergencies that acknowledges the critical activities frequently cover more than one phase, and the boundaries between phases are seldom precise [8,9,11]. Most sources also emphasize that important interrelationships exist among all the phases [13]. So the basis for the five phases widespread use of prevention, preparedness, response, recovery, and mitigation to help describe comprehensive emergency management like most of papers from the previous study, Kollasnikos *et al.,* [16], Adio-Moses *et al.,* [19], Ahmad *et al.,* [20], Baharin *et al.,* [21], Newport *et al.,* [22], [23], Zubir *et al.,* [24], AlBattat *et al.,* [25], Wei *et al.,* [26] and [27]. So, the summaries of five phases are as follows:

Prevention: Aims to avoid or minimize hazards. While not all risks can be eliminated, proactive measures significantly reduce the likelihood of loss of life and injury. This stage focuses on averting hazards, whether natural, technological, or human-induced. While not all hazards are preventable, measures such as robust evacuation plans, environmental planning, and adherence to design standards can significantly mitigate the risk of loss of life and injury.

Preparedness: Enhances readiness for all hazards. Preparedness entails continuous planning, organization, training, and equipping to enhance readiness for responding to all types of hazards, incidents, and emergencies. Activities include developing mutual aid agreements, conducting disaster exercises, and disseminating all-hazards education campaigns.

Response: Responding swiftly saves lives and minimizes losses. The response phase involves immediate actions aimed at saving lives, minimizing economic losses, and alleviating suffering following a catastrophic event. It encompasses coordinating resources, activating emergency operations centres, evacuating populations at risk, and providing essential services such as medical care and shelter.

Recovery: Begins after the immediate threat subsides. Recovery efforts commence once the immediate threat to human life has subsided and focus on restoring critical community functions and mitigating long-term damages. Activities include debris clean-up, financial assistance, infrastructure repair, and sustaining support for displaced populations until normalcy is restored.

Mitigation: Mitigation reduces the impact of disasters. It includes measures to prevent or lessen adverse effects. Mitigation efforts aim to diminish the impact of disasters and emergencies, thereby reducing loss of life and property damage. Examples include implementing building codes, zoning requirements, and creating defensible spaces around homes to safeguard against wildfires.

In summary, disaster management involves a holistic approach across these phases, ensuring safety, resilience, and eventual restoration. So, the basis for the five phases in emergency management widespread use are "Prevention, Preparedness, Response, Recovery and Mitigation" to help get the better result of work in emergency management as per Figure 1.
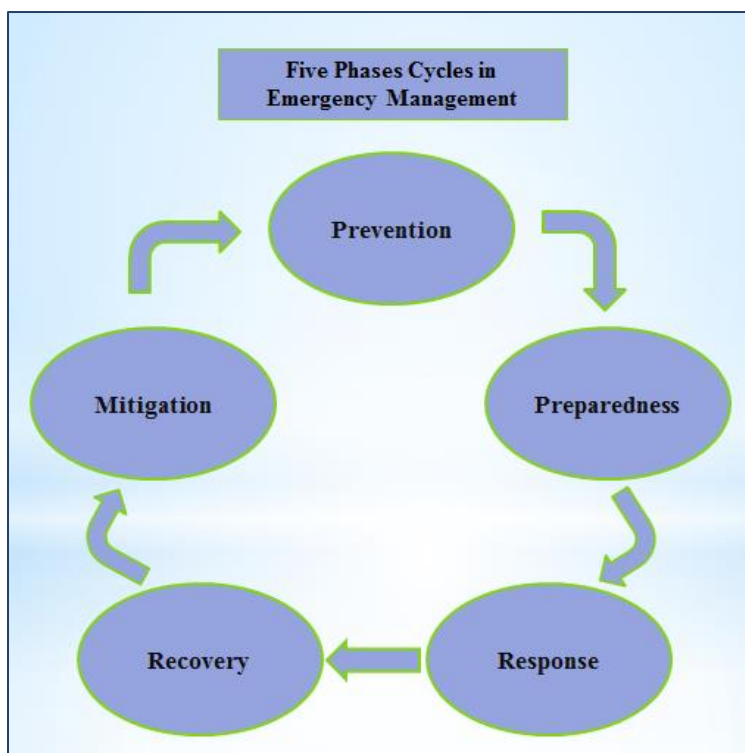
Fig. 1. Five Phases Cycles in Emergency Management

2. Methodology

The research employs analytical reviews of relevant articles to assess the functions and capabilities of EPRP. Content analysis is utilized to scrutinize the literature review presented in the article. The table summarizes the main findings of ten articles related to emergency preparedness and disaster management. The articles were selected from various sources, such as academic journals, websites, and government reports as in Table 1. five phases of emergency management [1,2,5,9,11,13,19,20,24,25). The articles cover different aspects of emergency preparedness and disaster management, such as factors influencing decision-making, risk mitigation strategies, community resilience, organizational culture, and modelling approaches. The articles also provide examples and recommendations for improving emergency preparedness and disaster management in different contexts, such as Malaysia, Turkey, Nigeria, the UAE, and the US.

Table 1
Five phases of emergency management

No.	Authors/Year	Title	Findings
1.	Renschler, Lauren A., Elizabeth A. Terrigino, Sabiya Azim, Elsa Snider, Darson L. Rhodes, and Carol C. Cox [1]. (2016)	Employee Perceptions of Their Organization's Level of Emergency Preparedness Following A Brief Workplace Emergency Planning Educational Presentation.	The article reports on a study that evaluated the effects of a brief emergency planning educational presentation on employees' perceptions of their organization's level of emergency preparedness from various workplaces in Northern Missouri, USA. Emergency planning educational presentations can improve employees' awareness and confidence in their organization's ability to cope with emergencies and suggested that such presentations should be supplemented by more comprehensive and tailored emergency planning activities involving management-employee collaboration.
2.	Rashid Alteneiji, Hamdan, Vian Ahmed, and Sara Saboor [2]. (2021)	A Qualitative Approach to Investigate Emergency Preparedness State for the Built Environment in the UAE.	Investigate the state of emergency preparedness for the built environment in the UAE and identify the limitations and challenges it faces when adopting the UK preparedness standards. Emergency preparedness is one of the crucial phases of the disaster management cycle, which involves planning, organizing, and training for potential emergencies and disasters that could affect people or property. The article reviews different preparedness standards adopted by developed countries such as the UK, the US, and Australia, and compares them with the current practices in the UAE.
3.	Tay, Huay Ling, Ruth Banomyong, Paitoon Varadejsatitwong, and Puthipong Julagasigorn [5]. (2022).	Mitigating Risks in the Disaster Management Cycle	The article reveals that risk awareness and horizontal and vertical collaboration and coordination among stakeholders are essential and fundamental for risk mitigation in the DMC. It suggests specific SCSs for each DMC phase, such as flexible supply base, mobile logistics hub, and joint planning, to manage the dominant risks such as demand risk, supply risk, operational risk, infrastructure risk, and disruption risk.

4.	Kapucu, Naim, and Sana Khosa [9]. (2013)	Disaster Resiliency and Culture of Preparedness for University and College Campuses.	The article examines the concept of disaster resiliency and culture of preparedness for university and college campuses in the United States and identifies six key elements that are important for creating a disaster-resilient university: Developing an all-hazards comprehensive emergency plan, continuity of operations plan, emergency information management, leadership support, community partnerships, and training for certification programs. The developing all-hazards plan, conducting regular training and exercises, and developing strong community partnerships are the most significant factors for creating a disaster-resilient university.
5.	Caymaz, Ebru, Fehmi Volkan Akyon, and Fahri [11]. (2013)	A Model Proposal for Efficient Disaster Management: the Turkish Sample.	The article proposes a model for efficient disaster management in Turkey, based on the standards of the United Nations and the best practices of other countries. Four main problems in the current disaster management system in Turkey: lack of coordination, lack of a strategic plan, lack of regional hazard maps, and lack of an efficient disaster management model. It is recommended that all relevant institutions should work collaboratively, exchange information, and conduct regular trainings and exercises to increase their preparedness level.
6.	Adamzadeh,Tahereh, Bahman Zamani, and Afsaneh Fatemi [13]. (2014)	A Modeling Language to Model Mitigation in Emergency Response Environments.	The article is about a modeling language that can help design and simulate the mitigation phase of emergency response environments (EREs). EREs are situations where there is a disaster that threatens people or property, and there are actions that can be taken to reduce the impact of the disaster. For example, a bushfire is a disaster, and cutting off the power supply is an action that can reduce the risk of fire spreading. Using a domain-specific modeling language (DSML) is better than using a general-purpose one, because it can capture the specific concepts and relationships of the ERE domain, such as disaster, exposure, threat, and reduce.
7.	Adio-Moses, Ruth O., and Patricia A. Taiwo [19]. (2019).	An Analysis of State of Emergency Preparedness and Response of Government to Disaster Risk Management In Nigeria.	The article analyzes the state of emergency preparedness and response of government to disaster risk management in Nigeria, focusing on the nature and consequences of disaster, the role of government agencies, and the problems and challenges affecting effective disaster management. The disaster risk management framework, which includes prevention, mitigation, preparedness, response, and recovery, and the roles and responsibilities of different levels of government and stakeholders in implementing it.

8.	Ahmad, Noor Afzan, Kamarizan Kidam, and Rahmat Mohsin [20]. (2021)	Emergency Management: Implementing A Whole Community Approach.	The article identifies three principles and six strategic themes of the whole community approach, based on the FEMA's guidelines, and discuss how they can enhance community resilience and disaster preparedness. To improve the whole community approach, such as engaging non-traditional partners, integrating community culture, and fostering collaboration and coordination among stakeholders.
9.	Zubir, S. N. A., S. Thiruchelvam, K. N. M. Mustapha, Z. Che Muda, A. Ghazali, and H. Hakimie [24]. (2017)	An Evaluation on Factors Influencing Decision Making for Malaysia Disaster Management:The Confirmatory Factor Analysis Approach	The article evaluates the factors influencing decision-making for emergency disaster management in Malaysia, using confirmatory factor analysis (CFA) and structural equation modelling (SEM). It highlighted that decision-making during a disaster is an important element of disaster management and requires effective collaboration and coordination among the agencies involved.
10.	AlBattat, Ahmad Rasmi, and Ahmad Puad Mat Som [25]. (2015)	Emergency preparedness of the hotel industry: The case of Jordan.	The article identifies various natural and man-made disasters that have affected the hotel industry in Jordan, such as terrorism, political instability, pandemics, fires, and poor maintenance. Management Explores the constraints and factors that influence the emergency planning and preparedness of Jordanian hotels, such as lack of funds, culture, security, and collaboration.

3. Results

The five-phase cycle model consists of prevention, preparedness, response, recovery, and mitigation. Each phase has its objectives, activities, and outcomes that are interrelated and interdependent. The challenges and benefits of implementing the EPRP model in the campus environment, such as the lack of awareness, resources, coordination, and training, as well as the improvement of safety, resilience, and reputation. The EPRP model can provide a comprehensive and systematic approach to emergency management in the campus environment and recommends further research and development to enhance the model and its application.

The EPRP model is a comprehensive and systematic approach to emergency management in the campus environment, but it also faces various difficulties and benefits. Some of the main challenges and drawbacks that affect the EPRP model are the low level of awareness, resources, coordination, and training among the campus community. These factors can reduce the effectiveness and efficiency of the EPRP model and increase the vulnerability and risk of the campus to emergencies and disasters. On the other hand, some of the main benefits and opportunities that the EPRP model offers are the improvement of safety measures, resilience, and reputation of the institution. These factors can enhance the preparedness and response capabilities of the campus and increase the confidence and trust of the stakeholders and the public.

The challenges and benefits of implementing the EPRP model in the campus environment are based on the experts and stakeholders involved. The main barriers and limitations that hinder the adoption and execution of the EPRP model, such as the lack of awareness, resources, coordination, and training.

4. Conclusions

In conclusion, the EPRP model is a valuable tool for emergency management in the campus environment, as it covers all the phases of the disaster management cycle, and integrates the key elements of prevention, preparedness, response, recovery, and mitigation. The EPRP model can help the campus to reduce the impact of emergencies and disasters and to recover and resume normal operations as soon as possible. However, the EPRP model also requires a lot of effort and commitment from the campus community, as it involves various challenges and barriers that need to be overcome. Therefore, the EPRP model should be implemented with a strategic and collaborative approach, involving all the relevant stakeholders and partners, and supported by adequate resources and training.

Acknowledgement

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