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# EMERGENCY RESPONSE TO VEHICULAR INCIDENTS IN BINALONAN, PANGASINAN

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**ABSTRACT**
*Emergency response to vehicular incidents is essential in reducing mortality, injuries, and property damage. This study assessed the effectiveness of emergency response systems in Binalonan, Pangasinan in terms of response time, inter-agency coordination, resource adequacy, and operational challenges. A mixed-methods design was used involving 48 respondents from the Philippine National Police, Bureau of Fire Protection, Municipal Disaster Risk Reduction and Management Office, and barangay officials. Results showed that municipal agencies demonstrated very adequate response capability while barangay preparedness was only adequate due to limited resources and training. Challenges identified included communication gaps, logistical constraints, and equipment limitations. The study recommends strengthening barangay emergency capacity, improving communication systems, and conducting regular joint training. The findings may help improve local emergency management systems and disaster preparedness.*
**KEYWORDS:** *Emergency Response, Vehicular Incidents, Disaster Management, Coordination, Response Time*

## INTRODUCTION

Road traffic incidents remain a major public safety concern due to their contribution to injuries and fatalities. Effective emergency response systems reduce these impacts through rapid response, coordination, and adequate resources. However, emergency response effectiveness in many localities is affected by limited infrastructure, insufficient personnel, and coordination issues.

In the Philippines, local emergency agencies such as the PNP, BFP, and MDRRMO play critical roles in vehicular incident response. Despite existing mechanisms, operational challenges such as delayed response, resource limitations, and coordination gaps remain concerns. Binalonan, Pangasinan was selected due to its exposure to vehicular incidents along major transport routes. This study therefore assessed emergency response effectiveness focusing on response time, coordination, resource adequacy, and operational challenges.

## METHODOLOGY

The study used a mixed-methods design combining quantitative and qualitative approaches. Respondents included 48 emergency personnel and barangay officials selected through purposive sampling due to their involvement in emergency response. Data were collected through survey questionnaires and interviews. Quantitative data were analyzed using weighted mean while qualitative responses were analyzed using thematic analysis. Ethical standards including confidentiality and voluntary participation were observed throughout the study.

## RESULTS AND DISCUSSION

The findings showed that response time is one of the strongest indicators of emergency response effectiveness in Binalonan, as agencies were generally able to respond within five to twelve minutes depending on traffic conditions and distance. This indicates a relatively functional dispatch and deployment system among municipal responders. This result is supported by recent research which found that reducing emergency medical service response time significantly decreases fatality risk in traffic crashes and that each one-minute delay may increase fatality probability by about 2.6%, emphasizing the importance of rapid emergency deployment systems (Huang et al., 2024).

The study also found that inter-agency coordination among the PNP, BFP, MDRRMO, and barangay officials contributes to effective emergency response operations because agencies demonstrated clear role distribution and communication practices during incidents. This supports studies emphasizing that coordinated emergency response structures improve operational efficiency and reduce duplication of emergency interventions. A recent emergency medical systems study similarly emphasized that structured coordination and dispatch organization significantly influence response performance and emergency outcomes (Mills et al., 2024).

Results further showed that municipal agencies possess more adequate emergency resources compared to barangay units due to better access to emergency vehicles, trained personnel, and logistical support. Meanwhile, barangay responders were limited by insufficient equipment and training opportunities. This finding is consistent with recent

emergency response research indicating that the availability of emergency stations, equipment, and trained personnel significantly affects response efficiency and service delivery capacity (Abedi et al., 2024).

The study also identified operational challenges such as communication gaps, traffic congestion, and limited rescue equipment which sometimes delay emergency response. These findings are supported by recent literature emphasizing that logistical constraints, staffing limitations, and infrastructure challenges remain common barriers affecting emergency response efficiency particularly in developing or resource-limited areas. Research further shows that delays in response may be linked to system capacity limitations such as personnel shortages and resource availability (Sørensen et al., 2025).

Overall, the results suggest that while emergency response systems in Binalonan are generally functional, strengthening barangay-level preparedness, improving communication infrastructure, and increasing logistical resources are necessary to further enhance response effectiveness. These findings align with contemporary emergency management research highlighting that integrated response systems, adequate resources, and rapid deployment remain critical factors in improving emergency outcomes.

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