Disaster Preparedness in Science City of Muñoz, Nueva Ecija: CDRRMO Strategies and Challenges

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ABSTRACT

This study evaluated the disaster preparedness strategies and challenges of the City Disaster Risk Reduction and Management Office (CDRRMO) in the Science City of Muñoz, Nueva Ecija. A descriptive research design was utilized, surveying 31 CDRRMO employees. Data were analyzed using frequency, percentage, and mean computation. The results show that most respondents were male, aged 32 to 40 years, married, and employed on a casual basis. Preparedness measures introduced by the CDRRMO received "strongly agree" ratings, with respondents expressing the highest confidence in these strategies. Conversely, challenges encountered by the CDRRMO in implementing disaster preparedness activities were rated "strongly disagree," indicating minimal perceived barriers to implementation.

Keywords: Disaster, Preparedness, Strategies, Challenges, Risk Reduction and Management Office

INTRODUCTION

Disasters are complex events with physical, emotional, cultural, and political dimensions that frequently extend beyond known trends and boundaries. In 2020, there were 416 natural disaster events globally, with the Asia-Pacific region experiencing the second-highest number of incidents worldwide. Natural disasters affect almost every nation (Permana et al., 2022). They are no longer seen as sporadic but are instead addressed with proactive management and reduction strategies. Managing the concept of safety during catastrophic events remains a crucial research question. Notably, "vulnerability"—particularly regarding civilization and human life—has emerged as a critical concept in disaster studies. Early identification and minimization of disaster causes and effects are essential for effective disaster management solutions (H. Setyawan, 2021).

According to ECHO (2023), preparedness enables timely and efficient responses, saving lives, reducing suffering, and minimizing needs. Preparedness reduces the impact of hazards and contributes to resilience. It promotes anticipatory actions, early responses, and adaptability—factors crucial to efficient and effective disaster management. Disaster preparedness refers to the knowledge and capacities developed by governments, response and recovery organizations, communities, and individuals. It relies on comprehensive disaster risk analysis in coordination with early warning systems and includes activities such as contingency planning, equipment and supply stockpiling, coordination arrangements, evacuation procedures, public information dissemination, as well as training and field exercises. These must be supported by robust institutional, legal, and budgetary frameworks (RA 10121).

This study aimed to assess the CDRRMO's strategies and challenges in reducing disaster risk and preparing for disasters in Science City of Muñoz, Nueva Ecija. The findings offer guidance to governments and

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stakeholders regarding opportunities and challenges in disaster risk reduction. Recommendations are proposed to improve CDRRMO strategies and programs, enhancing both preparedness and risk reduction capacity within the city.

METHODS AND PROCEDURE

A descriptive research design was employed, involving 31 CDRRMO employees. The study described respondents' socio-demographic characteristics, current strategies for disaster preparedness, and challenges faced in implementing preparedness measures. Data were collected with a researcher-prepared checklist questionnaire divided into four parts: socio-demographic profile, CDRRMO strategies for disaster preparedness, challenges encountered, and a 4-point Likert scale (4 – Strongly Agree, 3 – Agree, 2 – Disagree, 1 – Strongly Disagree).

Respondents provided informed consent, with assurances that participation was voluntary and data confidentiality was strictly maintained. Care was taken to prevent harm or distress, especially concerning disaster-related topics. Strict data protection policies were observed.

Permission to conduct the study was requested from the City Mayor of Science City of Muñoz, with the research adviser's endorsement. A pre-test of the instrument demonstrated high reliability, yielding a Cronbach Alpha of 0.93. Questionnaires were administered to CDRRMO employees, and instructions were clearly explained to ensure informed and accurate responses. Data were classified, tabulated, and analyzed according to the study's objectives. Descriptive statistics—including frequency counts, percentages, and means—were used to describe respondents' socio-demographic profiles and to evaluate strategies and challenges.

RESULTS AND DISCUSSIONS

Socio-Demographic Characteristics

Findings indicate that 32.30% of respondents were aged 32–40 years. Males made up 90.3% of respondents, 48.40% were married, and 54.80% were casual employees.

Strategies of CDRRMO in Disaster Preparedness

Table 1 presents the strategies of CDRRMO in Disaster Preparedness with the pooled mean of 3.80, described as strongly agree. It implies that the strategies of CDRRMO had a good impact in disaster preparedness.

Table 1. Strategies of CDRRMO in Disaster Preparedness

STATEMENTS	MEAN	DESCRIPTION
Our office regularly makes public announcements or advisories to inform the public regarding disaster preparedness.	3.97	Strongly Agree
Our office conducts community meetings to educate residents on disaster risks and safety measures.	3.97	Strongly Agree
Our office utilizes radio or television broadcasts as tools for spreading awareness about disaster preparedness.	3.13	Agree
Our office distributes printed materials, such as brochures or flyers, to educate the public on disaster preparedness.		

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3.68	Strongly Agree	
Our office has established an early warning system to alert residents about potential disasters.	3.97	Strongly Agree
Our office invests in building resilient infrastructure to withstand disasters.	3.97	Strongly Agree
Our office provides training programs for volunteers to assist during emergencies.	3.9	Strongly Agree
Our office conduct risk assessments to identify potential hazards in the community.	3.77	Strongly Agree
Our office have programs that educate the community about disaster preparedness and response strategies.	3.84	Strongly Agree
Our office has a strong coordination between different government agencies and local units.	3.84	Strongly Agree
Pooled Mean	3.80	Strongly Agree

Legend: 3.25 – 4.00 Strongly Agree

2.50 – 3.24 Agree

1.75 – 2.49 Disagree

1.00 – 1.74 Strongly Disagree

Key strategies—such as regular public announcements, community meetings, early warning systems, and investing in resilient infrastructure—all received mean ratings of 3.97. These highlight the office's focus on early-warning and preventive measures.

Conversely, the use of radio or television broadcasts for disaster awareness had the lowest mean rating (3.13, "Agree"), indicating these are not the primary channels utilized. Community meetings, printed materials, and face-to-face advisories are more widely prioritized in communications.

The United Nations Office for Disaster Risk Reduction (2020) emphasizes preparedness as a cornerstone of effective disaster risk management, reinforcing public awareness, response capacity, and clear role delineation.

Challenges encountered by the CDRRMO Science City of Muñoz in Disaster Preparedness

Table 2 shows the challenges encountered by the CDRRMO with the pooled mean of 1.55 described as strongly disagree. This implies that the CDRRMO has minimal challenges that they encounter when they are preparing for a disaster.

Table 2. Challenges Encountered

STATEMENTS	MEAN	DESCRIPTION
There is insufficient data available for planning and implementing disaster preparedness initiatives.	1.74	Strongly Disagree
There is a lack of technical expertise within CDRRMO to properly implement disaster preparedness measures.	1.55	Strongly Disagree

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Limited financial resources significantly hinder effective disaster preparedness efforts in CDRRMO.	1.39	Strongly Disagree
There is a shortage of trained personnel to handle disaster preparedness and response efforts in CDRRMO.	1.52	Strongly Disagree
The infrastructure for evacuation and shelter in CDRRMO is inadequate for disaster situations.	1.48	Strongly Disagree
The early warning systems in CDRRMO are inadequate to ensure timely disaster response.	1.58	Strongly Disagree
The communication systems in place for disaster preparedness are insufficient in CDRRMO.	1.55	Strongly Disagree
There is a insufficient community participation in disaster preparedness programs initiated by the CDRRMO.	1.71	Strongly Disagree
There is a lack of essential equipment and tools within CDRRMO to effectively implement disaster preparedness and response measure.	1.48	Strongly Disagree
The CDRRMO capacity for post-disaster needs assessment is limited.	1.55	Strongly Disagree
Pooled Mean	1.55	Strongly Disagree

Legend:

3.25 – 4.00	Strongly Agree
2.50 – 3.24	Agree
1.75 – 2.49	Disagree
1.00 – 1.74	Strongly Disagree

Availability of data (mean: 1.74) and financial constraints (mean: 1.39) were not considered barriers to effective disaster risk management within the CDRRMO. Sufficient funding, data, and resources underpin their ability to carry out preparedness initiatives.

Nonetheless, literature (Raju et al., 2023) notes that CDRRMOs elsewhere frequently face challenges such as resource gaps, coordination issues, training deficits, and limited community engagement—suggesting the situation in Science City of Muñoz may not be universal.

CONCLUSIONS

The CDRRMO in Science City of Muñoz is predominantly composed of males aged 32–40. Their strategies have positively influenced both office and community preparedness, with activities like public announcements, advisories, community meetings, and printed materials proving effective. The office has sufficient resources to implement its programs, and staff are knowledgeable and skilled in disaster preparedness.

RECOMMENDATIONS

Based on the findings, it is recommended that the CDRRMO continue and expand community engagement by conducting more disaster preparedness drills and educational campaigns to maintain and improve public awareness and readiness. Regular assessment and enhancement of the distribution of emergency supplies and rescue equipment should also be prioritized to ensure efficiency during disasters. Furthermore, utilizing social media platforms as additional channels for disseminating disaster preparedness information can help

reach a broader audience. The CDRRMO should offer in-depth discussions and training sessions on disaster-related topics and ensure strict implementation of these programs. Ongoing training and workshops for both personnel and community members are essential to maintain a high level of preparedness. Lastly, future researchers are encouraged to evaluate the current emergency facilities, evacuation centers, and other critical infrastructures for disaster response to further strengthen the city's overall disaster resilience.

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