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## ORIGINAL RESEARCH

### A nursing perspective of the financial planning model for disaster preparedness

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#### Abstract

Indonesia tends to be at a high risk of natural disasters, non-natural disasters, and social disasters. To minimize disaster impact, planning and management of finances are crucial. Unfortunately, a nursing study discussing the financial model during a disaster is lacking in the literature. The study aims to develop a financial planning model integrating Muhammadiyah Disaster Management Center in Magelang, Indonesia. An observational approach was involved in the study design. The member of One Muhammadiyah One Response (OMOR) in several districts was engaged. A checklist and closed-ended questions were used for the data collection process. The study established a financial planning model that can be helpful for community nurses working in disaster areas. Further study is required to evaluate the collaboration with other healthcare professionals in disaster preparedness.

**Keywords:** emergency care; disaster preparedness; community practice; nursing perspective; financial planning

#### Introduction

Indonesia tends to be at a high risk of disasters including natural, non-natural, and social disasters (Ayuningtyas, Windiarti, Hadi, Fasrini, & Barinda, 2021). To deal with this situation, it is important to integrate evaluation tools, personal protective equipment, health policy, and psychological support (Al Harthi, Al Thobaity, Almalki, & Al Ahmari, 2021). The disaster led to economic problems hampering national growth. Studies highlighted that financial planning during a disaster has not been carried out by the government (Madjid, 2018). Disasters pose serious economic or environmental impacts surpassing the capacity of the countries to compete with the use of the assets (Huo et al., 2021). In Indonesia, as a response to the various disaster, Muhammadiyah developed an organization focusing on disaster management named Muhammadiyah Disaster Management Center (MDMC) (Ichsan, 2022). MDMC trained the member to cope with the disaster nationally and internationally such as Rohingya refugees (Hasan, Younos, & Farid, 2021). In addition, MDMC implemented One Muhammadiyah One Response (OMOR) to respond to the action when disaster happens. A study emphasizes that the healthcare team of disaster management is medical teams and nurses (Firouzkouhi, Kako, Abdollahimohammad, Balouchi & Farzi, 2021).

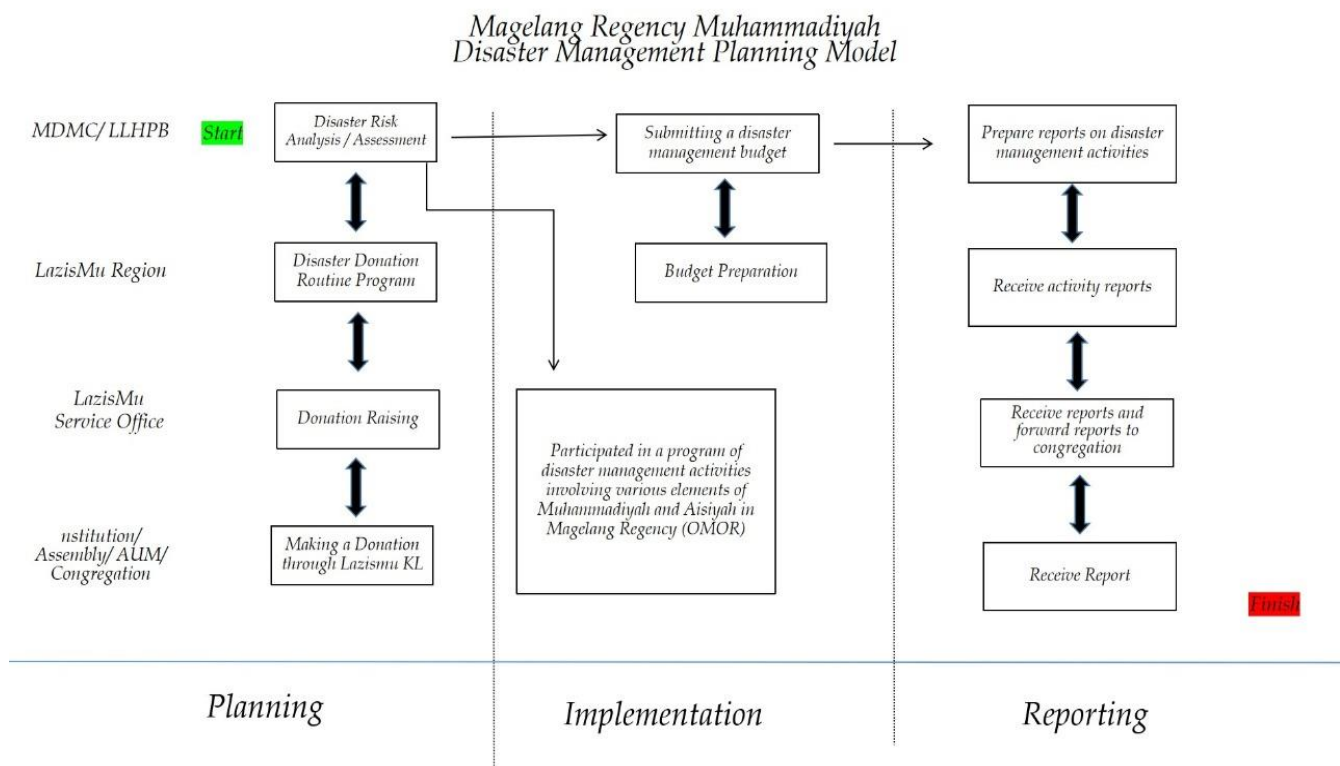
Magelang, as a small city in Indonesia, has various disasters including volcanoes, landslides, floods, tornadoes, and droughts. Gunung Merapi was devastated by continuous violent eruptions during the times. The eruptions included repeated discharges causing pyroclastic flows to populated areas (Muir, Cope, Angeningsih, Jackson, & Brown, 2019). This situation will lead to economic problems in the days to come. A study documented that financial management is lacking and ineffective during the disaster in Magelang (Pratama & Nurmandi, 2020). The economic damage caused by disasters varies for example the loss of housing, schools, factories and equipment, roads, dams, and bridges are lost. Also, human capital is depleted because of the loss of life, skilled workers, and the destruction of education infrastructure. The World Bank estimates that disasters cost the global economy \$520 billion annually while pushing 26 million people into poverty. Since the Sendai Framework was adopted, some 60 million people in over 100 countries have been displaced by disaster events, mainly floods, storms and droughts. Economic losses from natural disasters have been increasing in recent decades. This has been attributed mainly to population and economic growth

in disaster-prone areas. Future natural disaster losses are expected to increase due to a continued increase in economic exposure and climate change (Botzen, Deschenes, & Sanders, 2019). Earthquake in Yogyakarta and Central Java on May 27, 2006, took over 5,700 lives with injury estimates ranging from 37,000–50,000. The total amount of damages and losses were initially estimated at US\$3.1 billion, i.e., much higher than those caused by the tsunami in Sri Lanka, India, and Thailand (Leitmann, 2007).

Studies above mentioned the impact of the disaster on the economic aspect. However, the analysis of financial loss is the lack in the literature. This is important as planning is expected to create an effective and efficient planning model in disaster management. It is undeniable that the government has limitations in providing a budget for natural disasters. The available budget for disasters is limited due to the lack of preparedness. Due to this situation, it is fundamental to develop a model focusing on financial planning in disaster preparedness. The study has an objective to provide a comprehensive approach to preventing the increased financial problem during disasters.

### Method

The study used an observational study design to gain various data during the research. The population of the study is all members of MDMC in Magelang. The study started on March 2019 until September 2019. The inclusion criteria were active members, having experience for more than three years, both healthcare professionals and non-healthcare workers, and able to communicate in Bahasa. Meanwhile, the exclusion criteria are a non-active member of MDMC. The survey used a questionnaire that has been validated by experts having experience in disaster preparedness. The data collection process was conducted by the lead researcher periodically. A total of 14 respondents from 14 branch office of MDMC was involved in the study. Data analysis using manual analysis considering the financial aspects. There is no statistical analysis used during data evaluation. Before the study outset, all the participants signed the informed consent form.



**Figure 1.** A financial planning model of disaster preparedness

## Results

The following is the summary of the finding according to the data gained during the study (**Figure 1**). The author established 4 main points as a component for developing financial planning model.

### *Suitability analysis*

This point indicated that each branch office of MDMC does not have a systematic strategy for developing the financial model. LazisMu was optimized for funding sources when disasters occur. However, there is no specific budget that can be allocated for this situation.

### *Planning Model*

Donation is the main action in this step as LazisMu works according to the mandate by Muhammadiyah. This situation will hamper the action process when a disaster occurs.

### *Budget allocation*

A budget allocation is the amount of funding directed to each expenditure line during the disaster. It designates the maximum amount of funding an MDMC is willing to spend on a given item or program, and it is a limit that is not to be exceeded by the employee authorized to charge expenses to a particular budget line.

### *Budgeting mechanism*

A fundraising program from LazisMu is forwarded to the LazisMu service office at the branch level when a disaster occurs. In the future, there will be a month of disaster donations and special funds allocated for disaster management, especially emergency services.

### *Implementation of activities*

The implementation of these steps is not well structured as the budget will be ready when a disaster occurs. In the future, it is planned that there will be a program for disaster management and risk factor analysis, particularly in emergency care. The role of healthcare professionals including nurses seems to be important.

## Discussion

The study showed that the financial management of disaster preparedness has not been optimized during the times. The LazisMu merely provide donation and does not have any funding for this situation. A study documented that managing humanitarian aid and donations among the people will be effective management and appropriate policies improve the condition (Safarpour et al., 2020). When a disaster occurs, One Muhammadiyah One Response (OMOR) provide a fast response to support all the aspect needed including financial support (**Figure 1**). Although not following the centralization of LazisMu regulation, the current financial budget assistance comes from donations. However, the incidental donations make program activities not carried out properly including a need to fulfill the basic human need after a disaster happened (Li & Wang, 2022). In addition, the finding of the study explained that 35% of respondents stated that there have been regular donation activities in schools that are also being used for scholarships. The importance of budget planning based on a disaster risk assessment will increase the effectiveness of the OMOR program in the Magelang Regency (Jahar & Fauziah, 2015).

MDMC as the coordinator of disaster management activities will conduct a disaster risk assessment in the Magelang Regency area. The finding of the study can be a reference in the preparation of contingency plans and budgets by LazisMu and the official institution for collecting donations in Muhammadiyah. This LazisMu disaster budget planning activity will be carried out on the design of a routine donation program through routine donation for business charities and Muhammadiyah congregations. This routine donation will be given at 20% of LazisMu's total income through routine donation. Meanwhile, from non-routine programs, donations will be made at each disaster location 100% for disaster-affected areas (Jahar & Fauziah, 2015). The model presents data that the implementation of the disaster management model is coordinated by MDMC including budget planning, and donation collection that collaborate with LazisMu in Magelang (**Figure 1**). This is important as the disaster occurs in a community setting which needs a comprehensive intervention. A study supported that significant roles in improving the potential and strength of community-based disaster management for affected people should involve healthcare professionals such as nurses (Yodsuban & Nuntaboot, 2021; Xue, Shu, Hayter, & Lee, 2020).

Financial management (e.g., donation) is important as several natural disasters have put enormous pressure on relief organizations worldwide. A study highlighted that social-cognitive factors, past donation to disaster relief campaigns, awareness of a disaster relief campaign, and intention to donate to a disaster relief campaign affect the willingness to do a charity for an organization (Oosterhof, Heuvelman, & Peters, 2009). Global disaster donation is not dominated by only philanthropy or trade interests as Countries with higher perceived corruption donate more frequently, but those that are more democratic may be more generous in their donations (Wei & Marinova, 2016). Generosity based on geographical proximity is fundamental in the decision-making process for disasters, yet it may harm donations (Arias, Bronfman, Cisternas, & Repetto, 2017; Zagefka, 2021). As already investigated in the study, the donation program will be carried out routinely by MDMC and LazisMu. Documentation will be completed by LazisMu and the member by evaluating all the processes. In addition, the donation distribution can be given to the affected community by collaborating with OMOR. In the implementation of disaster management, the healthcare professional may handle the emergency response and collaborate with the medical team from Muhammadiyah hospital in Magelang (Gillani et al., 2021). Control of the disaster program is an activity to evaluate performance in the OMOR program. Reporting documentation activities are very useful for financial disclosure in disaster programs. This activity report can be an indicator of the success of the OMOR program performance. Control of disaster program is carried out for each program of disaster activities which will be reported in a comprehensive, open, and systematic way (**Figure 1**).

The National Agency for Disaster Countermeasure proposed a regulation no.4 of 2008 classified two mitigations as follows active mitigation and passive mitigation. The community must be able to anticipate and take steps to deal with the possibility of a disaster. Many people are not ready to face disasters that often occur suddenly. As a result, it is important to increase public awareness of disaster risk and disaster preparedness (Nkombi & Wentink, 2022). The Indonesian government plays a major role in natural disaster management. Even though the government budget is very limited, the government must be responsible for the impact of disaster occurs (Al Harthi, Al Thobaity, Al Ahmari, & Almalki, 2020). To ensure natural disasters are handled properly, the government is expected to assess the following aspect such as the number of affected people, available budget and rehabilitation facilities (Finucane, Acosta, Wicker & Whipkey, 2020).

Calculating losses due to disasters is still a difficult thing to do and often overestimated. Therefore, MDMC needs good planning and implementation of disaster management. A study emphasized that a synergistic, sustainable partnership and collaboration should be integrated with disaster management (Madrigano, Chandra, Costigan, & Acosta, 2017). It is necessary to involve multi-sectoral, multi-stakeholder and multi-hazardous events so that the key to success in handling them is command and coordination (Shah, Miller, & Mothabbir, 2019). Disaster mitigation is the initial stage, such as preparation, the necessary steps, and both facilities and infrastructure before a disaster occurs (Bullock, Haddow, & Coppola, 2013). In disaster mitigation, macroeconomic observations also show that several macroeconomic variables can be affected by disasters. Budget planning is an important point in disaster mitigation as it will prevent adverse outcomes after the disaster (Fahlevi, Indriani, & Oktari, 2019). Effective budgeting improves disaster management programs, appropriateness, consistency and commitment (Firmansah, 2019). Finally, the financial planning model of disaster preparedness helps healthcare professionals deal with disasters, particularly in the community setting.

## **Conclusion**

This financial model may contribute to managing the budget for disaster preparedness. MDMC, LazisMu and health policymakers should work together to optimize management. Prevention strategies are also important against further loss due to disaster. In addition, community nurses can collaborate with mental health professionals to recover the psychological status of the population. Future studies focus on the disaster risk and emergency response between nurses and people living in high-risk disaster areas.

## **Author's declaration**

The authors made substantial contributions to the conception and design of the study and took responsibility for data analysis, interpretation, and discussion of results. For manuscript preparation, all the authors read and approved the final version of the paper.

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### Availability of data and materials

All data are available from the authors.

### Competing interests

The authors declare no competing interest.

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### References

- Al Harthi, M., Al Thobaity, A., Al Ahmari, W., & Almalki, M. (2020). Challenges for Nurses in Disaster Management: A Scoping Review. *Risk management and healthcare policy*, 13, 2627–2634. <https://doi.org/10.2147/RMHP.S279513>
- Al Harthi, M., Al Thobaity, A., Almalki, M., & Al Ahmari, W. (2021). Improving Disaster Readiness and the Response of Nurses in Saudi Arabia. *Risk management and healthcare policy*, 14, 4537–4544. <https://doi.org/10.2147/RMHP.S325074>
- Arias, J. P., Bronfman, N. C., Cisternas, P. C., & Repetto, P. B. (2017). Hazard proximity and risk perception of tsunamis in coastal cities: Are people able to identify their risk?. *PloS one*, 12(10), e0186455. <https://doi.org/10.1371/journal.pone.0186455>
- Ayuningtyas, D., Windiarti, S., Hadi, M. S., Fasrini, U. U., & Barinda, S. (2021). Disaster Preparedness and Mitigation in Indonesia: A Narrative Review. *Iranian journal of public health*, 50(8), 1536–1546. <https://doi.org/10.18502/ijph.v50i8.6799>
- Botzen, W., Deschenes, O., & Sanders, M. (2019). The Economic Impacts of Natural Disasters: A Review of Models and Empirical Studies. *Review of Environmental Economics and Policy*, 13(2), 167-188. <https://doi.org/10.1093/reep/rez004>
- Bullock, J. A., Haddow, G. D., & Coppola, D. P. (2013). Mitigation, Prevention, and Preparedness. *Introduction to Homeland Security*, 435–494. <https://doi.org/10.1016/B978-0-12-415802-3.00010-5>
- Fahlevi, H., Indriani, M., & Oktari, R. S. (2019). Is the Indonesian disaster response budget correlated with disaster risk?. *Jamba (Potchefstroom, South Africa)*, 11(1), 759. <https://doi.org/10.4102/jamba.v11i1.759>
- Finucane, M. L., Acosta, J., Wicker, A., & Whipkey, K. (2020). Short-Term Solutions to a Long-Term Challenge: Rethinking Disaster Recovery Planning to Reduce Vulnerabilities and Inequities. *International journal of environmental research and public health*, 17(2), 482. <https://doi.org/10.3390/ijerph17020482>
- Firouzkouhi, M., Kako, M., Abdollahimohammad, A., Balouchi, A., & Farzi, J. (2021). Nurses' Roles in Nursing Disaster Model: A Systematic Scoping Review. *Iranian journal of public health*, 50(5), 879–887. <https://doi.org/10.18502/ijph.v50i5.6105>
- Gillani, A. H., Li, S., Akbar, J., Omer, S., Fatima, B., Ibrahim, M., & Fang, Y. (2021). How Prepared Are the Health Care Professionals for Disaster Medicine Management? An Insight from Pakistan. *International journal of environmental research and public health*, 19(1), 200. <https://doi.org/10.3390/ijerph19010200>
- Hasan, M. K., Younos, T. B., & Farid, Z. (2021). Nurses' knowledge, skills and preparedness for disaster management of a Megapolis: Implications for nursing disaster education. *Nurse education today*, 107, 105122. <https://doi.org/10.1016/j.nedt.2021.105122>
- Huo, C., Hameed, J., Nawaz, A., Adnan Raheel Shah, S., Albahser, G., Alqahtani, W., Maqsoom, A., & Kashif Anwar, M. (2021). Scientific risk performance analysis and development of disaster management framework: A case study of developing Asian countries. *Journal of King Saud University. Science*, 33(2), 101348. <https://doi.org/10.1016/j.jksus.2021.101348>
- Ichsan M. (2022). Handling natural hazards in Indonesia amid the COVID-19 pandemic: Muhammadiyah's response and strategy. *Jamba (Potchefstroom, South Africa)*, 14(1), 1254. <https://doi.org/10.4102/jamba.v14i1.1254>
- Jahar, A., & Fauziah, R. (2015). Evaluasi program kebencanaan pada disaster management center dompet dhuafa dan PKPU: studi bencana banjir DKI Jakarta. (Bachelor), UIN Syarif Hidayatullah, Jakarta. <https://repository.uinjkt.ac.id/dspace/handle/123456789/28407?mode=full>

- Leitmann, J. (2007). Cities and calamities: learning from post-disaster response in Indonesia. *J Urban Health*, 84(3 Suppl), i144-153. <https://doi.org/10.1007/s11524-007-9182-6>
- Li, X., & Wang, Y. (2022). Construction of Urban Flood Disaster Emergency Management System Using Scenario Construction Technology. *Computational intelligence and neuroscience*, 2022, 8048327. <https://doi.org/10.1155/2022/8048327>
- Madjid, N. (2018). Analisis metode penghitungan dan alokasi anggaran bencana alam. *Simposium Nasional Keuangan Negara*, 1046-1065. <https://jurnal.bppk.kemenkeu.go.id/snkn/article/download/263/156/>
- Madrigano, J., Chandra, A., Costigan, T., & Acosta, J. D. (2017). Beyond Disaster Preparedness: Building a Resilience-Oriented Workforce for the Future. *International journal of environmental research and public health*, 14(12), 1563. <https://doi.org/10.3390/ijerph14121563>
- Muir, J. A., Cope, M. R., Angeningsih, L. R., Jackson, J. E., & Brown, R. B. (2019). Migration and Mental Health in the Aftermath of Disaster: Evidence from Mt. Merapi, Indonesia. *International journal of environmental research and public health*, 16(15), 2726. <https://doi.org/10.3390/ijerph16152726>
- Nkombi, Z., & Wentink, G. J. (2022). The role of public participation in disaster risk reduction initiatives: The case of Katlehong township. *Jamba (Potchefstroom, South Africa)*, 14(1), 1203. <https://doi.org/10.4102/jamba.v14i1.1203>
- Oosterhof, L., Heuvelman, A., & Peters, O. (2009). Donation to disaster relief campaigns: Underlying social cognitive factors exposed. *Evaluation and Program Planning*, 32(2), 148-157. doi:<https://doi.org/10.1016/j.evalprogplan.2008.10.006>
- Pratama, P. Y., & Nurmandi, A. (2020). Collaborating network in managing post the Mount Merapi's disruption, Indonesia. *Jamba (Potchefstroom, South Africa)*, 12(1), 927. <https://doi.org/10.4102/jamba.v12i1.927>
- Safarpour, H., Fooladlou, S., Safi-Keykaleh, M., Mousavipour, S., Pirani, D., Sahebi, A., Ghodsi, H., Farahi-Ashtiani, I., & Dehghani, A. (2020). Challenges and barriers of humanitarian aid management in 2017 Kermanshah earthquake: a qualitative study. *BMC public health*, 20(1), 563. <https://doi.org/10.1186/s12889-020-08722-5>
- Shah, R., Miller, N. P., & Mothabbir, G. (2019). Approaches to support continued iCCM implementation during a flooding emergency in rural Bangladesh. *Journal of global health*, 9(2), 021001. <https://doi.org/10.7189/jogh.09.021001>
- Wei, J., & Marinova, D. (2016). The orientation of disaster donations: differences in the global response to five major earthquakes. *Disasters*, 40(3), 452-475. <https://doi.org/10.1111/disa.12160>
- Xue, C. L., Shu, Y. S., Hayter, M., & Lee, A. (2020). Experiences of nurses involved in natural disaster relief: A meta-synthesis of qualitative literature. *Journal of clinical nursing*, 29(23-24), 4514-4531. <https://doi.org/10.1111/jocn.15476>
- Yodsuban, P., & Nuntaboot, K. (2021). Community-based flood disaster management for older adults in southern of Thailand: A qualitative study. *International journal of nursing sciences*, 8(4), 409-417. <https://doi.org/10.1016/j.ijnss.2021.08.008>
- Zagefka H. (2021). Perceived human and material costs of disasters as drivers of donations. *Journal of applied social psychology*, 51(5), 495-501. <https://doi.org/10.1111/jasp.12751>