Nursing outcomes guideline in major post-floods communities in Indonesia

Agianto[1], Herry Setiawan[2], Novi Mustahdiati Nasri[3], Yulia Yunara[4], Muhammad Karunia[5], Muhammad Fasya Aminullah[5], Rezka Aulyan Noo[5], Dwi Wanda Yulianti[5]

[1]Department of Medical-Surgical Nursing, School of Nursing, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarmasin, Indonesia
[2]Department of Nursing Management, School of Nursing, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarmasin, Indonesia
[3]Idaman Regional Public Hospital, Banjarbaru, Indonesia
[4]Department of Community Health Nursing, School of Nursing, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarmasin, Indonesia
[5]Nursing Study Program, School of Nursing, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarmasin, Indonesia

ABSTRACT

Health problems resulting from flooding have a very significant role in the sustainability of people's lives. Major floods hit South Kalimantan, Indonesia in 2021. The impact of the flooding will cause nursing problems in the community. There has been no research on nursing outcomes for communities affected by floods, although research has been conducted on identifying nursing diagnoses for post-flood communities. The aim of the research is to develop nursing outcomes for nursing diagnosis in post-flood communities in Indonesia. Descriptive analytics with a cross-sectional approach. The research sample was 140 people with a consecutive sampling technique using a questionnaire with 207 assessment items on nursing outcomes for nursing diagnoses that emerged in post-flood communities. Univariate analysis was used. The 14 nursing diagnoses that emerged in flood-affected communities, there are 33 nursing outcomes labels with 91 outcome indicators. Nursing diagnoses and nursing outcomes that have been obtained can be made into a guidebook for nursing care in post-flood communities. The quality of nursing services can be improved when a disaster occurs to reduce disability, complications and even death during and after a flood disaster.

This is an open access article under the CC BY-SA license.

Corresponding Author:

Agianto
Department of Medical-Surgical Nursing, School of Nursing, Faculty of Medicine and Health Sciences
Universitas Lambung Mangkurat
Banjarbaru, South Kalimantan 70714, Indonesia
Email: agianto@ulm.ac.id

1. INTRODUCTION

Floods become the highest frequency of disaster occurred worldwide [1]. In the last ten years, floods, droughts have caused 80–90% of all natural disasters that have been officially recorded. Over 2 billion people were impacted by floods globally between 1998 and 2017 [2]. The most at-risk groups include those who reside in floodplains, non-resistant construction, lack of warning systems, and ignorance of the flooding hazard. Not only are floods becoming more frequent and intense, but climate change is also expected to increase the frequency and intensity of extreme precipitation [2]. The flood disaster that occurred

on January 2021 hit 11 of the 13 districts in South Kalimantan, Indonesia it was recorded that 112,709 residents were displaced and 27,111 houses were submerged due to flooding [3]. Banjar Regency was the most affected, namely 33,377 families with 120,226 people, followed by Hulu Sungai Tengah Regency with 29,127 families with 57,624 people. Cross-provincial roads were submerged, disrupting economic activity [4].

South Kalimantan is in the high risk class with a score of 152 with the threat of disaster risk including floods, landslides, forest/land fires, tornadoes and tidal waves/abrasion [3]. This is because South Kalimantan Province has diverse regional contours, ranging from hilly contours on the edge to lowlands in the city center, so that it looks like a bowl with the center of Banjarmasin City at the bottom of the bowl. This causes the river to flow first towards the city center before ending at the sea [4]. The problem faced by residents of South Kalimantan is post-flood waste management which has not yet been handled properly. Domestic waste is still piled up on the side of the road and has not been completely removed. Untreated post-flood trash and dirty water have a huge potential to pollute groundwater [4].

Health problems resulting from flooding have a very significant role in the sustainability of people's lives [5]. A study that comprehensively reviews research literature has generally summarized the health impacts of flooding into three sections based on time, direct impacts; medium term impact; and long-term impacts [6]. Health impacts that can occur immediately when flooding occurs include drowning, injury, hypothermia and animal bites [7]. Health risks are also related to patient evacuation, loss of health personnel, and loss of health infrastructure including medicines and other essential supplies [8], [9]. During the evacuation process, at-risk age groups such as pregnant women, toddlers, children, the elderly and people with disabilities are at risk of health problems [10]. Later effects, in the medium term, can include infected wounds, injury complications, poisoning, poor mental health, infectious diseases and starvation. While in refugee camps, eating and drinking from public kitchens whose safety or health is uncertain [11].

The impacts of flooding continue long-term, such as the emergence of chronic diseases, disability, poor mental health, and poverty-related diseases including malnutrition [12]. Mental health problems are one of the issues that is widely discussed after disasters, including floods [13]. The relationship between floods and mental health concluded that the main mental health disorders that occurred during and after flood disasters were post-traumatic stress disorder, depression and anxiety [14]. The nursing diagnoses that may appear in each person is certainly not just one but can vary and it depends on the individual's response [15]. There is still no nursing research on nursing outcomes in post-flood areas. Researchers have carried out research to identify nursing diagnoses and outcomes that emerge in post-flood communities in South Kalimantan.

2. METHOD

This study used cross sectional design conducted in Banjar and Hulu Sungai Tengah Districts in South Kalimantan. The 140 samples in this study were taken using consecutive sampling technique using a questionnaire with 207 assessment items on nursing outcomes classification (NOC) [16]. The inclusion criteria in this study were: i) Primary health nurses who work in areas that have been affected by flooding, namely primary health care facility in Banjar Regency and Hulu Sungai Tengah District in South Kalimantan; ii) Diploma 3 in Nursing, Bachelor of Nursing, or Nursing Professional; and iii) Willing to be a research sample. The data analysis used was univariate analysis of the demographic data of research samples and each nursing problem that emerged in post-flood communities. This research had been declared ethically feasible by the Ethics Commission of the Faculty of Medicine in Universitas Lambung Mangkurat with reference number No. 254/KEPK-FK ULM/EC/VIII/2022.

3. RESULTS AND DISCUSSION
3.1. Sample demographic characteristics

Most nurses came from primary health care facility of Banjar District was 120 nurses while 20 nurses from Hulu Sungai Tengah District. Male nurses were 60 nurses, while there were 80 female nurses. The level of education was distributed to certain levels such us Diploma in Nursing (n=95), Nursing Professional (n=30), while 15 nurses with a Bachelor of Nursing. Almost all nurses are married except 35 unmarried nurses as shown in Table 1. These circumstances may have an impact on nurses' actions [17]. Steps to protect individuals at risk of death were noted, along with an endeavor to reach isolated areas [18]. Together with the social assistance workforce, nurses were eager to assist the underprivileged by supplying and distributing necessities. Direct help with wound care, vaccinations, psychological support, and referrals when necessary were all used to deliver healthcare [19]. For the purpose of providing and continuing treatment, those patients who required medication were also contacted. Reaching those families in high-risk areas and paying them a visit at home prior to the flood to warn them of the impending catastrophe was a concern [20]. Nurses continued to visit these families as part of the response to educate them on the prevention of infectious diseases.

Table 1. Demographic characteristics of primary health nurses (n=140)

Demographic characteristics	Frequency	Percentage (%)
Primary health care:		
Banjar district area	120	85.70
Hulu Sungai Tengah district area	20	14.30
Gender:		
Male	60	42.90
Female	80	57.10
Marital status:		
Married	105	75
Single	35	25
Level of education:		
Diploma in nursing	95	67.90
Bachelor of nursing	15	10.70
Nurse professional	30	21.40

3.2. Nursing outcomes in post-floods communities

Using the nursing diagnostic classification NANDA-I, which is used in the research field, the researcher chose in advance of the meeting the nursing diagnoses (ND) that were most commonly listed and verified by the nurses [21]. As indicated in Table 2, the ND included religiosity barriers, anxiety, fear, coping ineffectiveness, fall risk, and more. Following the decision, the researcher looked at the chapters on NOC and NANDA-I, which detail additional and suggested findings related to the ND and discuss how to apply them to patient evaluation [16], [21]. The researchers then used a questionnaire to reach a consensus on the best outcomes and indicators to choose for the patients. The 33 nursing outcomes labels with 91 outcome indicators as a result from an emerged of 14 nursing diagnoses in post-floods communities. Each nursing diagnoses has one to three labels, and each nursing outcomes label has three indicators as shown in Table 2.

Table 2. Number of nursing outcomes of 14 nursing diagnoses in post-floods communities

No	Nursing diagnoses	Nursing outcomes	
		Number of labels	Number of indicators
1.	Religiosity barriers-00169	2	6
2.	Fear–00148	2	6
3.	Comfort barriers–00214	3	9
4.	Fall risk–00155	3	9
5.	Ineffectiveness of family health management–00080	2	6
6.	Contamination–00181	3	9
7.	Risk of Infection–00004	3	9
8.	Anxiety–00146	2	6
9.	Coping ineffectiveness–00069	2	6
10.	Skin integrity damage–00046	2	6
11.	Diarrhea–00013	3	9
12.	Family coping decreased–00074	1	3
13.	Hypothermia–00006	2	6
14.	Spritual distress–00066	3	9
	Total	33	91

Those who are forced to stay in shelters for extended periods of time after a disaster suffer significant effects to their physical, mental, and social wellbeing while they search for other places to live [22]. Aside from the fact that living in shelters with others puts them in close proximity to others and increases the risk of infection control, disaster victims are more likely to suffer from post-traumatic stress disorder [23]. When it comes to acute injuries, like penetrating wounds or bone fractures, the long-term residents of shelters frequently have far higher health needs than those of those who remain there temporarily [24]. The nursing diagnoses that we found out—risk infection, skin integrity damage, diarrhea, anxiety, fear, and more—are reflected in it.

From a number of nursing diagnoses that we discovered, including two nursing outcome labels for barriers to religiosity, such us spiritual health, which has three indicators (quality of belief, ability to worship, and spiritual satisfaction), and comfort status: psychospiritual (belief, hope, and expression of optimism) [16], [21]. In the alternative, a nursing diagnosis of contamination has three nursing outcome labels: gastrointestinal function (frequency, consistency, and diarrhea of the stool), home environmental safety (cleanliness, handrail placement, and ease of bathroom access), and personal safety behavior (preparing food to minimize contamination, seeking safety information related to the environment, using strategies to prevent

environmental contamination) [16], [21]. Please refer to Table 3 (see in Appendix) for more details of nursing outcomes labels in post-flood communities.

Isolated rural locations, exposure to life-threatening conditions, going temporarily or permanently from one's home, medication shortages, wounds, dermatitis, infectious and respiratory illnesses, waterborne infections, zoonosis, venomous animal mishaps, and waste disposal were among the situations reported [25]. Post-flooding psychosocial and mental health outcomes, responses, and recovery are influenced by the specific needs, contextual circumstances, resources, and priorities of each community [26]. Understanding the local area and community was essential to responding to psychosocial and mental health issues and recovering from them [27]. This required determining the affected community's priorities, such as housing or clean water, as well as the current leaders in the community [28]. The use of frameworks with ongoing community engagement is necessary to guide psychology and mental health interventions [29].

Providing basic necessities like food, drink, shelter, and the prevention of water-borne illnesses was the top priority for nurses during the response phase [30]. Although challenges like a sense of helplessness and a perception of their practice's limitations were mentioned, a solid connection with the general population and its territory helped to facilitate the response [31]. The absence of guidelines to assist them in their practice was another issue [15]. When handling food, water, cleaning, and hygiene practices were taught, they indicated that they needed assistance with these activities [3], [32]. The team received health education in order to get them ready to create community education initiatives. Meetings were held at the shelters, at the homes of the affected individuals, and at the health services.

Flood management calls for competence, skill, and knowledge [17]. When it comes to carrying out nursing actions and interventions that are centered on nursing management in curative and preventative healthcare services, nurses have faith in the nursing process [33]. However, the position may begin in step one of the typical nursing processes: Analyze the diagnosis and the actual events—what issue would arise in order to evaluate the issue that has emerged? Step two is defining the goals and objectives for the actual goals that need to be met [18]. To ensure that the intervention produces high-quality results, goals and objectives must be based on an adequate comprehension of the situation, practice, and time limitations [34].

The assessment of the flood and disaster evidence must come first in order to initiate the implementation of action and setup [34]. Assessing the extent of understanding on flood issues, such as the cause behind the flood. Which kind of flood—a natural flood or a man-made flash flood—was occurring? The level of severity of the flood disaster—mild, moderate, or severe [35]. The rationale behind the planning, preparation, and intervention, as well as the action, whether it involved a small or large community, the number of victims, the level of victims, the victims involved, the type of community, the financial level, and any people directly affected by the flood [35].

In addition to helping and supporting disaster victims, primary health nurses were crucial in setting up the safety system for nursing staff and victims of disasters, summarizing the outcomes of disaster operations within the nursing organization, providing nursing services with related networks after the disaster, and restoring the environment and services [17]. They were also in charge of assigning nursing staff and managing utilities and resources [35]. In order to ensure community resilience during the flood disaster, the response team must collaborate with multiple stakeholders from the private sector, local governments, non-governmental organizations, and the community at large [18]. All types of individuals were needed to manage the disaster and deal with the large number of victims who experienced losses and damages. Nursing practice requires collaborative relationships with public health nurses (PHNs), public health doctors (PHDs), epidemiologists (EPIs), environmental mental health officers (EHOs), food safety officers (FSOs), and others who are directly involved in disaster relief [33].

This study has various ramifications for enhancing nursing outcomes in disaster areas affected by flooding across the globe; i) Create guidelines for post-flood disaster nursing as well as ongoing training and education for employees; ii) Make improvements to the system so that nurses can function well inside the healthcare system and are not confused by a lack of coordination; iii) Based on the requirements and weaknesses identified by risk assessments, enhance the disaster plan; and iv) Enhance the disaster nursing policies and procedures to guarantee that there are no ethical or conflicting interests among the nurses. This study focused on nursing outcomes in communities that were affected by flooding, so it cannot be applied to other types of disasters. Further research and study are required.

4.   CONCLUSION

Nursing outcomes are one of the determinants of the success of nursing intervention and implementation, as a criteria for the evaluation process. Nursing diagnoses and nursing outcomes that have been obtained can be made into a guidebook for nursing care in post-flood communities. The quality of nursing services can be improved when a disaster occurs to reduce disability, complications and even death during and after a flood disaster. From the research implementation stages that have been carried out, it is

necessary to continue the stages of developing standards of nursing care based on nursing problems that occur in post-flood communities which include nursing diagnoses and nursing outcomes in order to achieve nursing care that is appropriate to the needs and conditions experienced by the community.

ACKNOWLEDGEMENTS

APPENDIX

Table 3. Nursing outcomes classification in post-floods communities

No	Nursing diagnoses	Nursing outcomes	
		Labels	Indicators
1.	Religiosity barriers-00169	Spiritual health (2001)	Quality of confidence
			Ability to worship
			Spiritual satisfaction
		Comfort status: psychospiritual (2011)	Confidence
			Hope
			Expression of optimism
2.	Fear–00148	Fear level (2010)	Can't rest
			Excessive worry about life events
			Afraid
		Self-control over fear (1404)	Avoid sources of fear whenever possible
			Stay productive
			Controlling fear responses
3.	Comfort barriers–00214	Social engagement (1503)	Interact with close friends
			Interact with neighbors
			Interact with family members
		Social support (1504)	Willingness to contact others for help
			Information provided by others
			People who can help as needed
		Psychosocial settings: life changes (1305)	Set realistic goals
			Maintain productivity
			Use available social support
4.	Fall risk–00155	The fall (1912)	Fall while standing
			Fall while walking
			Falling while going to the bathroom
		Fall prevention behavior (1909)	Using hand grips
			Provide adequate lighting
			Provides assistance with movement
		Home environmental security (1910)	Residential cleanliness
			Placement of handrails
			Ease of bathroom access
5.	Ineffectiveness of Family Health Management–00080	Family normalization (2604)	Maintain the family routine as usual
			Maintain appropriate activities and routines
			Maintain expectations for family members as usual
		Family participation in professional care (2605)	Provide relevant information
			Obtain the necessary information
			Identify factors that influence care
6.	Contamination–00181	Personal security behavior (1911)	Prepare food to minimize contamination
			search for security information related to the environment
			use strategies to prevent environmental contamination
		Gastrointestinal function (1015)	Frequency of defecation
			Pheses consistency
			Diarrhea
		Home environmental security (1910)	Residential cleanliness
			Placement of handrails
			Ease of bathroom access

Table 3. Nursing outcomes classification in post-floods communities (*continued*)

No	Nursing diagnoses	Nursing outcomes	
		Labels	Indicators
7.	Risk of Infection–00004	Infection severity (0709)	Redness
			Painful
			Fever
		Severity of physical injury (1913)	Blisters on the skin
			Bruises
			Scratch wounds
		Risk control (1902)	Look for information about health risk
			Identify risk factors
			Monitor environmental risk factors
8.	Anxiety–00146	Anxiety level (1211)	Can't rest
			Feeling restless
			Anxiety conveyed verbally
		Stress level (1212)	Anxiety
			Worry
			Decreased productivity
9.	Coping ineffectiveness–00069	Coping (1302)	Expresses feelings of self-control
			Reported reduction in stress
			Express acceptance of the situation
		Social support (1504)	Willingness to contact others to help
			Information provided by others
			People who can help as needed
10.	Skin integrity damage–00046	Integirity of skin tissue and mucous membranes (1101)	Skin integrity
			Lesions on the skin
			Exfoliation
		Primary wound healing (1102)	Scar formation
			Erythema of the surrounding skin
			Bruising on the surrounding skin
11.	Diarrhea– 00013	Bowel continence (0500)	Recognize the desire to defecate
			Maintains phase discharge control
			Respond to the desire to defecate in a timely manner
		Intestinal elimination (0501)	Elimination pattern
			Ease of defecation
			Diarrhea
		Hydration (0602)	Skin turgor
			Moist mucous membranes
			Tissue perfusion
12.	Family coping decreased– 00074	Family coping (2600)	Make plans for emergencies
			Reporting assistance for family needs
			Using available community resources
13.	Hypothermia–00006	Thermoregulation (0800)	Shivering when cold
			Decrease in body tempetature
			Changes in skin color
		Risk control: hypothermia (1923)	Identify risk factors for hypothermia
			Take independent action to control body temperature
			Do outdoor activities when the temperature is warm
14.	Spritual distress–00066	Spiritual health (2001)	Quality of confidence
			Ability to worship
			Spiritual satisfaction
		Refrain from anger (1410)	Identify early signs of anger
			Identify situations that trigger anger
			Identify the reasons for feeling angry
		Comfort status: psychospiritual (2011)	Confidence
			Hope
			Expression of optimism

REFERENCES

[1]   World Health Organization, "Floods." World Health Organization, 2023. [Online]. Available: https://www.who.int/health-topics/floods#tab=tab_1. (Accessed: Sep 18, 2023).

[2]   "Indonesia: Floods and Landslides - Jan 2021," *reliefweb*. 2021. [Online]. Available: https://reliefweb.int/disaster/fl-2021-000005-idn. (Accessed: Sep 18, 2023).

[3]   "Global Natural Disaster Assessment Report 2020," *reliefweb*. 2022. [Online]. Available: https://reliefweb.int/report/world/2021-global-natural-disaster-assessment-report. (Accessed: Sep 18, 2023).

[4]   BNPB/National Agency for Disaster Management Kalimantan Selatan, "Update situation report: Flood disaster emergency management in South Kalimantan, *in Indonesia:* Laporan situasi terkini penanganan darurat bencana banjir di wilayah Provinsi Kalimantan Selatan," no. 15. BNPB, South Kalimantan, pp. 1–21, 2021. [Online]. Available: https://tinyurl.com/Arsip-Sitrep-Kalsel. (Accessed: Sep 18, 2023).

[5]   I. ul Haq *et al.*, "Risk factors of mid-upper arm circumference (MUAC) based child malnutrition in the flood-affected areas of Pakistan: a cross-sectional study: child malnutrition in flood-hit areas," *Ecology of Food and Nutrition*, vol. 60, no. 4, pp. 491–507, 2021, doi: 10.1080/03670244.2021.1872024.

[6]   R. Witt and R. Menegat, "WADEM congress on disaster and emergency medicine - 2019 abstracts of oral presentations - ADDENDUM," *Prehospital and disaster medicine*, vol. 34, no. 4, p. 463, Aug. 2019, doi: 10.1017/S1049023X19004667.

[7]   A. Subandi, S. Alim, F. Haryanti, and Y. S. Prabandari, "Training on modified model of programme for enhancement of emergency response flood preparedness based on the local wisdom of Jambi community," *Jamba: Journal of Disaster Risk Studies*, vol. 11, no. 1, pp. 1–9, 2019, doi: 10.4102/JAMBA.V11I1.801.

[8]   C. Guo, T. Sim, and G. Su, "Individual disaster preparedness in drought-and-flood-prone villages in northwest china: Impact of place, out-migration and community," *International Journal of Environmental Research and Public Health*, vol. 18, no. 4, pp. 1–14, Feb. 2021, doi: 10.3390/ijerph18041649.

[9]   V. L. Mitrović, D. P. O'Mathúna, and I. A. Nola, "Ethics and floods: a systematic review," *Disaster Medicine and Public Health Preparedness*, vol. 13, no. 4, pp. 817–828, Aug. 2019, doi: 10.1017/dmp.2018.154.

[10] M. Arshad, M. K. Mughal, R. Giallo, and D. Kingston, "Predictors of child resilience in a community-based cohort facing flood as natural disaster," *BMC Psychiatry*, vol. 20, no. 1, pp. 1–10, Nov. 2020, doi: 10.1186/s12888-020-02944-y.

[11] R. Timalsina and P. Songwathana, "Factors enhancing resilience among older adults experiencing disaster: A systematic review," *Australasian Emergency Care*, vol. 23, no. 1, pp. 11–22, Mar. 2020, doi: 10.1016/j.auec.2019.12.007.

[12] K. Upward, K. Usher, and V. Saunders, "The impact of climate change on country and community and the role of mental health professionals working with Aboriginal communities in recovery and promoting resilience," *International Journal of Mental Health Nursing*, vol. 32, no. 6, pp. 1484–1495, Dec. 2023, doi: 10.1111/inm.13184.

[13] M. Golitaleb, E. Mazaheri, M. Bonyadi, and A. Sahebi, "Prevalence of post-traumatic stress disorder after flood: a systematic review and meta-analysis," *Frontiers in Psychiatry*, vol. 13, p. 890671, 2022, doi: 10.3389/fpsyt.2022.890671.

[14] Y. J. Choi, H. S. Jung, E. J. Choi, and E. Ko, "Disaster Healthcare workers' experience of using the psychological first aid mobile app during disaster simulation training," *Disaster Medicine and Public Health Preparedness*, vol. 17, no. 8, p. e55, Oct. 2023, doi: 10.1017/dmp.2021.308.

[15] L. K. Aun, T. L. K. Fei, and S. B. M. Yusof, "The impact of flood from the nursing perspective: a qualitative discovery," *European Journal of Management and Marketing Studies*, vol. 3, no. 4, pp. 209–224, 2019, doi: 10.5281/zenodo.2548029.

[16] S. Moorhead, E. Swanson, and M. Johnson, *Nursing outcomes classification (NOC)*, 7th ed. Elsevier, 2023.

[17] R. P. Menegat and R. R. Witt, "Critical Requirements for nursing practice in rural disasters caused by floods," *Revista Brasileira de Enfermagem*, vol. 72, no. 3, pp. 687–691, 2019, doi: 10.1590/0034-7167-2017-0606.

[18] L. J. Chisholm, R. L. Hale, and S. L. Knight, "Community resilience after hurricanes: can neuman's systems theory guide public health nursing?," *Research and Theory for Nursing Practice*, vol. 37, no. 1, pp. 84–100, Feb. 2023, doi: 10.1891/RTNP-2022-0029.

[19] S. B. Hassmiller and M. K. Wakefield, *The future of nursing 2020–2030: charting a path to achieve health equity*, vol. 70, no. 6. 2022. doi: 10.1016/j.outlook.2022.05.013.

[20] T. A. Ariani, T. Hernawaty, B. A. Keliat, S. P. Konara Mudiyanselage, and M. F. Lin, "Holistic nursing and quran recitation and its impact on floods survivors in Indonesia," *Journal of Holistic Nursing*, p. 8980101231210419, Nov. 2023, doi: 10.1177/08980101231210419.

[21] N. Internasional, *Nanda-1 nursing diagnoses: definitons and classification 2018-2020, in Indonesia: Nanda-1 Diagnosis keperawatan definisi dan klasifikasi 2018-2020*, 11th ed. Jakarta: EGC, 2018.

[22] M. Al Harthi, A. Al Thobaity, W. Al Ahmari, and M. Almalki, "Challenges for nurses in disaster management: A scoping review," *Risk Management and Healthcare Policy*, vol. 13, pp. 2627–2634, 2020, doi: 10.2147/RMHP.S279513.

[23] M. Hatami, M. A. Marzaleh, M. Bijani, and M. Peyravi, "Factors affecting the preparedness of Helicopter Emergency Medical Services (HEMS) in disasters: a systematic review," *BMC Emergency Medicine*, vol. 23, no. 1, p. 135, Nov. 2023, doi: 10.1186/s12873-023-00908-5.

[24] D. H. Mami Nojima, "Consideration of nursing care demand for families in disaster: a literature review," *International Journal of Nursing Studies*, vol. 3, no. 3, p. 103579, 2019, doi: 10.35654/ijnhs.v3i3.262.

[25] M. Heidari, N. Sayfouri, S. S. Miresmaeeli, and A. Nasiri, "Analysis of the man-made causes of shiraz flash flood: Iran, 2019," *Prehospital and Disaster Medicine*, vol. 35, no. 5, pp. 588–591, Oct. 2020, doi: 10.1017/S1049023X20000795.

[26] M. Heidari, N. Sayfouri, and S. Heidari, "Lessons learned from the higher risk perception and the efficient flood mitigation in haji-abad, Golestan Province, Iran, 2019," *Disaster Medicine and Public Health Preparedness*, vol. 15, no. 3, pp. 339–343, Jun. 2021, doi: 10.1017/dmp.2020.14.

[27] D. Jermacane *et al.*, "The english national cohort study of flooding and health: the change in the prevalence of psychological morbidity at year two," *BMC Public Health*, vol. 18, no. 1, p. 330, Mar. 2018, doi: 10.1186/s12889-018-5236-9.

[28] N. Partash *et al.*, "The impact of flood on pregnancy outcomes: A review article," *Taiwanese Journal of Obstetrics and Gynecology*, vol. 61, no. 1, pp. 10–14, Jan. 2022, doi: 10.1016/j.tjog.2021.11.005.

[29] R. P. Priyanti *et al.*, "Community preparedness in flood disaster: a qualitative study," *International Quarterly of Community Health Education*, vol. 40, no. 1, pp. 67–68, Oct. 2019, doi: 10.1177/0272684X19853169.

[30] H. Susanti, A. Y. S. Hamid, S. Mulyono, A. F. Putri, and Y. A. Chandra, "Expectations of survivors towards disaster nurses in Indonesia: A qualitative study," *International Journal of Nursing Sciences*, vol. 6, no. 4, pp. 392–398, Oct. 2019, doi: 10.1016/j.ijnss.2019.09.001.

[31] R. P. Menegat and R. R. Witt, "Primary health care nurses' competencies in rural disasters caused by floods," *Rural and Remote Health*, vol. 18, no. 3, pp. 1–11, Sep. 2018, doi: 10.22605/RRH4450.

[32] P. Boonyaratkalin, S. Partiprajak, and N. Piaseu, "Flood preparedness literacy and behaviors in community dwelling older adults," *Disaster Medicine and Public Health Preparedness*, vol. 15, no. 4, pp. 452–457, Aug. 2021, doi: 10.1017/dmp.2020.27.

[33] D. Miyamori *et al.*, "How the 2018 japan floods impacted nursing home admissions for older persons: a longitudinal study using the long-term care insurance comprehensive database," *Journal of the American Medical Directors Association*, vol. 24, no. 3, pp. 368–375, Mar. 2023, doi: 10.1016/j.jamda.2022.11.021.

[34] S. Katsura, J. Hagihara, and Y. Yamada, "[Daily information-gathering behavior of natural disaster victims: Focusing on residents who experienced the Great East Japan Earthquake and the Kanto-Tohoku Heavy Rainfall Disaster].," *[Nihon koshu eisei zasshi] Japanese journal of public health*, vol. 68, no. 4, pp. 221–229, Apr. 2021, doi: 10.11236/jph.20-093.

[35] J. Liu, T. Potter, and S. Zahner, "Policy brief on climate change and mental health/well-being," *Nursing Outlook*, vol. 68, no. 4. United States, pp. 517–522, 2020. doi: 10.1016/j.outlook.2020.06.003.

BIOGRAPHIES OF AUTHORS

Agianto is a lector on Universitas Lambung Mangkurat in Department of Medical-Surgical Nursing. He holds his master and Ph.D. in Khon Kaen University in Thailand. He is a lecturer in the field of medical-surgical nursing that focuses to stroke, community health, and health management. He is interested in exploring determinants of health problems and nursing. He is a writer and reviewer in well-known scientific journals, also an active speaker in various international conference. He can be contacted at email: agianto@ulm.ac.id.

Herry Setiawan is a lecturer from Universitas Lambung Mangkurat in Department of Nursing Management. His research interest are health and nursing management including disaster management. He is active as a writer, reviewer in scientific journals, and speaker on workshops. He can be contacted at email: ners_herry@ulm.ac.id.

Novi Mustahdiati Nasri is an emergency nurse in Idaman Regional Public Hospital in South Kalimantan, Indonesia. She is active in research as a research assistant in School of Nursing, Universitas Lambung Mangkurat. Her research interest mainly focused on emergency nursing, emergency management, and disaster management. She can be contacted at email: novimustahdiatinasri@gmail.com.

Yulia Yunara is a lecturer in Department of Community Health Nursing in Universitas Lambung Mangkurat. Involved with several research projects in the field of community health, public health, and nursing innovation. Her research interest mainly focused on community health, cadre empowerment, and innovation in nursing. Researcher fellow at the Department of Community and Elderly Health Nursing in Airlangga University. She can be contacted at email: yunarayulia9@gmail.com.

Muhammad Karunia is a nurse who graduated from the School of Nursing at Universitas Lambung Mangkurat. He was a research assistant in lecturer research carried out at the School of Nursing at Universitas Lambung Mangkurat. He can be contacted at email: karuniadaf0692001@gmail.com.

Muhammad Fasya Aminullah 🆔 𝒈 ꜱᴄ ◖ is a nurse who graduated from the School of Nursing at Universitas Lambung Mangkurat. He was a research assistant in lecturer research carried out at the School of Nursing at Universitas Lambung Mangkurat. He can be contacted at email: muhammadfasya86@gmail.com.

Rezka Aulyan Noor 🆔 𝒈 ꜱᴄ ◖ is a nurse who graduated from the School of Nursing at Universitas Lambung Mangkurat. She was a research assistant in lecturer research carried out at the School of Nursing at Universitas Lambung Mangkurat. She can be contacted at email: anrezka@gmail.com.

Dwi Wanda Yulianti 🆔 𝒈 ꜱᴄ ◖ is a nurse who graduated from the School of Nursing at Universitas Lambung Mangkurat. She was a research assistant in lecturer research carried out at the School of Nursing at Universitas Lambung Mangkurat. She can be contacted at email: dwiwndylnti@gmail.com.