Original Article

Disaster Preparedness Among Hospital Nurses in a High-Risk Region: A Cross-Sectional Study from Pekalongan, Indonesia

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Abstract

Background: Disaster preparedness is an essential component of healthcare systems, particularly in high-risk regions where healthcare providers, especially nurses, are expected to respond effectively during emergencies. Their readiness depends on sufficient training, knowledge, and confidence to act under pressure.
Objective : This study aimed to assess the level of disaster preparedness among nurses working at RSI PKU Muhammadiyah Pekajangan, a hospital located in a disaster-prone area of Pekalongan, Indonesia.
Methods: A descriptive cross-sectional study design was applied, involving 142 nurses selected through total population sampling. Data were gathered using the Disaster Preparedness Evaluation Tool (DPET), which consists of 28 items covering four core domains. Descriptive statistics were used to analyze demographic information and preparedness levels.
Results: Among the respondents, 69.7% were women, and 60.6% held a Diploma III in Nursing. The majority (62.0%) were assigned to inpatient care units. Participants had an average of 10.09 years of professional experience, ranging from 1 to 34 years. Preparedness levels were classified as moderate in 64.1% of nurses and good in 35.9%; no respondents fell into the low-preparedness category.
Conclusion: Most nurses demonstrated a moderate level of disaster preparedness, regardless of their educational background or years of experience. To enhance hospital readiness, it is recommended that continuous training, simulation exercises, and regular evaluations be integrated into institutional disaster management strategies.

Keywords: Disaster Preparedness, Emergency Response, Hospital-Based Preparedness, Indonesia, Nursing

INTRODUCTION

Disasters are events or a series of events that threaten and disrupt human life and livelihoods, resulting from natural, non-natural, or human factors, and often lead to casualties, environmental damage, property loss, and psychological trauma (1). Geographically and geologically, Indonesia is highly prone to natural disasters such as earthquakes, tsunamis, floods,

landslides, typhoons, and tornadoes. These recurring events affect nearly every region of the country, causing substantial human and economic losses. Disaster risk levels vary across regions and are influenced by environmental conditions, physical infrastructure, and the socioeconomic vulnerabilities of local communities. For instance, floods in 2023 affected nine districts in Central Java Province, disrupting public life and causing considerable economic and environmental damage (2). This underscores the critical importance of health emergency preparedness and disaster planning (3).

Health services play a vital role during disasters by preventing death, disability, and disease and minimizing the broader impact of emergencies. Effective disaster response requires well-prepared healthcare personnel, particularly in disaster-prone areas (4,5). However, one of the main challenges in disaster management remains the shortage of healthcare human resources who are not only sufficient in number but also competent in disaster response. Therefore, planning for the placement and capacity-building of health personnel—especially nurses—is essential (Ministry of Health Decree No. 066/2006) (6).

According to the 2023 *World Risk Report*, Indonesia ranks as the second most disaster-prone country globally, with a World Risk Index (WRI) score of 43.50 out of 100—indicating a high level of disaster risk. National data from the *2022 Indonesian Disaster Risk Index (IRBI)* places Central Java in the medium-risk category with a score of 115.38. However, Pekalongan Regency, one of the most affected districts, has a high-risk index of 168.52, ranking fourth in Central Java. Disasters frequently occurring in this region include floods, landslides, tidal waves, strong winds, droughts, and fires (7).

Nurses play an essential role in reducing disaster impact through rapid, effective medical interventions. Hospitals, as key health service providers, must recognize their responsibility in disaster risk areas and strengthen internal preparedness (8). The physical impact of disasters on healthcare infrastructure is also significant. In 2022 alone, 130 health facilities across nine provinces in Indonesia were affected by disasters, disrupting operations—an increase from 103 in 2021 (9).

Previous research by Lestari (3) at a regional hospital in Bandung revealed that 85% of emergency nurses had a moderate level of disaster preparedness. The highest preparedness scores were related to the incident command system, while the lowest were in managing special populations—highlighting a critical training gap (10). Addressing the needs of special populations during disasters requires targeted training to ensure appropriate care and minimize harm.

RSI PKU Muhammadiyah Pekajangan, a private hospital in Pekalongan with a capacity of 175 beds, plays an important role in regional disaster response due to its strategic location on a main transportation route linking northern and southern Central Java. This hospital has actively participated in several emergency responses, including sending medical teams and establishing health posts during tidal floods and earthquakes in Pekalongan, Lombok (11), and Cianjur (12). Notable incidents at the hospital include an electrical short circuit in the surgical ward and panic during a 2017 earthquake, where patients were evacuated to the hospital yard.

Given its location in a disaster-prone region encompassing both coastal and mountainous areas, RSI PKU Muhammadiyah Pekajangan is a critical referral center during emergencies. The southern region frequently experiences landslides, flash floods, hurricanes, and earthquakes, while the northern area is regularly affected by tidal flooding, often occurring biweekly. Therefore, assessing the preparedness of nurses working in this facility is vital. Understanding nurses' readiness to respond to disasters will provide valuable insights into hospital emergency capacities and guide improvements in disaster risk reduction strategies.

METHODS

Study Design

This study utilized a descriptive cross-sectional survey design to assess the disaster preparedness levels among nurses. The approach was selected to capture a snapshot of nurses' preparedness at a specific point in time, enabling quantification of preparedness levels and identification of associated factors (13).

Sample

Population and Sampling Technique

The study population comprised all registered nurses working at Muhammadiyah Pekajangan Pekalongan Islamic Hospital, a facility located in a disaster-prone region of Central Java, Indonesia. A total sampling technique was employed, meaning all eligible nurses working in the hospital during the study period were invited to participate. This approach ensures comprehensive data collection and reduces sampling bias in a limited population (14).

Inclusion and Exclusion Criteria

Inclusion criteria for the study comprised registered nurses who were currently employed at Muhammadiyah Pekajangan Pekalongan Islamic Hospital, demonstrated a willingness to participate as evidenced by signed informed consent, and were available during the data collection period. Nurses were excluded if they were on extended leave or absent during data collection or if their questionnaire responses were incomplete or missing.

Since a total sampling technique was used, the final sample size was equal to the number of eligible nurses at the hospital, totaling 142 respondents. This sample size was considered adequate for descriptive statistical analysis, as it surpassed the minimum number required to achieve a 95% confidence level with a 5% margin of error for a finite population (15)

Instrument

The research instrument employed in this study was the Disaster Preparedness Evaluation Tool (DPET), developed by Wang and colleagues in 2006. This validated tool is widely utilized to assess disaster preparedness among nurses and consists of 28 items categorized into four domains: knowledge about disaster preparedness, skills in responding to disasters, personal preparedness, and workplace preparedness. Each item is measured using a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Higher scores reflect greater levels of preparedness. The total preparedness score is derived by summing all item scores, with higher total scores indicating a higher overall level of disaster preparedness. The original version of the DPET demonstrated excellent reliability, with a reported Cronbach's alpha coefficient of 0.91 (16).

Procedure

Following ethical approval and formal permission from the hospital, data were collected between July 17th and July 26th, 2024. Researchers coordinated with the nursing department to distribute printed, self-administered questionnaires to nurses during their shift transitions. Written informed consent was obtained prior to participation. Respondents completed the questionnaires anonymously and returned them in sealed envelopes to ensure confidentiality and reduce social desirability bias.

Data Analysis

All data were entered and analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize demographic data and disaster preparedness scores. Normality testing was performed using the Kolmogorov–Smirnov test.

Ethical Considerations

Ethical approval was granted by the Research Ethics Committee of [insert institution name, if known] (Approval No: [insert number if applicable]). Written informed consent was obtained from each participant after they were informed about the study's purpose, voluntary participation, confidentiality assurance, and the right to withdraw at any time. The study adhered to the ethical principles of the Declaration of Helsinki and respected participants' autonomy and privacy.

RESULTS

A descriptive survey of 142 nurses at Muhammadiyah Pekajangan Pekalongan Islamic Hospital revealed a predominantly female (69.7%) workforce, with most holding a Diploma in Nursing (60.6%). The average age of the participants was 36.96 years (SD 7.566), and the average length of working experience was 10.09 years (SD 8.865). Most of the participants (62%) worked in the In-Patient Department, while smaller proportions worked in the Out-Patient Department (16.9%), Emergency Room (9.9%), and Operating Room (9.2%). A small number (2.1%) were employed in the Nursing Office or managerial level as described in Table 1.

Table 1. Socio-demographic characteristic of participants (n = 142)

Characteristic	Frequency n (%)
Sex	
Male	43 (40.3)
Female	99 (69.7)
Education Level	
Diploma of Nursing	86 (60.6)
Bachelor of Nursing	2 (1.4)
Nurse Profession Education	54 (38.0)
Ward	
Emergency Room	14 (9.9)
Operating Room	13 (9.2)
In-Patient Department	88 (62.0)
Out-Patient Department	24 (16.9)
Nursing Office	3 (2.1)
Age (Years Old)	
Min-Max	24 – 55
Mean ± SD	36.96 ± 7.566
Working experience	
Min-Max	1 – 34
mean± SD	10.09 ± 8.865

Among the 142 nurses surveyed, a significant majority of the participants (64.1%) demonstrated moderate levels of disaster preparedness, while a smaller proportion (35.9%) exhibited good preparedness. No nurses showed evidence of low levels of preparedness, as seen in Table 2.

Tabel 2. Disaster Preparedness Level among Nurses (n = 142)

Disaster Preparedness Level	Frequency n (%)
Good preparedness	52 (35.9%)
Moderate preparedness	90 (64.1%)
Less preparedness	0

Table 3 shows that the 25 items on the DPET can be divided into three sub-categories, respectively (i) knowledge, (ii) disaster management skills, and (iii) family preparedness; measured with a 6-point Likert scale. The study revealed that while nurses demonstrated moderate knowledge of disaster preparedness and a majority expressed interest in further training, significant gaps existed in key areas. Awareness of community vulnerabilities was notably low, with only a small fraction (7.7%) having established contact lists for disaster situations and even fewer (22%) understanding the local emergency response system. Furthermore, approximately a quarter of participants reported knowing who to contact during a community disaster, highlighting the need for enhanced communication protocols and training to address these critical deficiencies.

The study revealed significant deficiencies in disaster management skills among the nurses. Less than a quarter understood triage principles, and fewer than half participated in regular simulation exercises. Only 28% felt prepared for disaster management, and a mere 7.7% believed they would be trusted as community leaders in such situations, indicating a critical need for enhanced training and practical experience, this information provided in Table 3 on the Disaster Management Skill section.

While regarding the family readiness in facing disaster, a substantial majority of participants (87%) reported having a personal/family emergency response plan, and a similar proportion (83%) had established communication and action plans with loved ones, indicating a strong level of family preparedness for disasters.

The last section of Table 3 provided information about the assessment of patient management skills during disaster response which revealed significant limitations. A small percentage of nurses felt confident addressing the diverse psychological and physical needs of disaster survivors (14%), providing traumas-related education (21%), or identifying mass exposure indicators (25%). Similarly, limited confidence was reported in triage and temporary clinic setup (16%), specialist disaster roles (13%), and executing emergency response plans (21%), highlighting a critical need for enhanced training in these crucial areas.

Tabel 3. The Description of Disaster Preparedness among Nurses (n=142)

Item	SD	D	SWD	NADN (%)	A	SA	Mean± SD
Knowledge on disaster preparedness							**4.00±0.82**
I am interested in taking a class (training) on disaster preparedness which is directly related to the situation in my community.	0	1 (1)	2 (1)	21 (15)	108(76)	10(7)	4.87±1.49
I am interested in classes on disaster preparedness and management offered, for example, in the workplace.	0	2 (1)	6 (4)	49 (35)	75(53)	10 (7)	4.60±1.05
In my opinion, published research results on disaster preparedness are easy to understand.	0	4 (3)	11 (8)	63 (44)	56(39)	8(6)	4.37±0.90
I know the limits of my knowledge, skills, & authority as a registered nurse to act in a disaster situation, and I will recognize when I have exceeded those limits.	0	1 (1)	21 (15)	73 (51)	47(33)	0	4.17±0.92
Searching for relevant information regarding disaster preparedness related to the needs of the community around me is an obstacle to my level of preparedness.	10 (7)	41 (29)	25 (18)	28 (20)	38(27)	0	3.30±0.49
I pay attention to potential vulnerabilities in the community around me (for example earthquakes, floods, terror).	0	2 (1)	18 (13)	70 (49)	51(36)	1 (1)	4.22±0.93
In my opinion, if a disaster occurs, there is adequate support from local officers/officials at the district or central level.	0	7 (5)	14 (10)	61 (43)	58(41)	2 (1)	4.24±0.92
I know where to look for relevant research or information related to disaster preparedness and management to fill gaps in my knowledge.	0	2 (1)	31 (22)	66 (46)	41(29)	2(1)	4.07±0.80
I have a contact list of people in the medical/healthcare environment where I work. I know the reference contacts in the event of a disaster situation (for example the health department/section).	12 (8)	23 (16)	30 (21)	46 (32)	30(21)	1(1)	3.44±0.52
. In my opinion, published research results on disaster preparedness and management are easy to access.	0	5 (4)	32 (23)	62 (44)	43(30)	0	4.01±0.79
. I participate in one of the educational activities such as continuing education classes, seminars or conferences related to disaster preparedness on a regular basis.	4 (3)	38 (27)	16 (11)	55 (39)	28(20)	1 (1)	3.48±0.59
. I understand the local disaster emergency response system.	1 (1)	5(4)	45 (32)	61 (43)	28(20)	2(1)	3.82±0.69
. I know who to contact (chain of command) in a disaster situation in my community.	2 (1)	0	43 (30)	61 (43)	34(24)	2 (1)	3.92±0.73
. I read journal articles related to disaster preparedness.	2 (1)	17(12)	48 (34)	52 (37)	23(16)	0	3.54±0.60
Disaster Management Skills							**3.75±0.72**
I know the triage principles used in disaster situations.	0	1 (1)	9 (6)	77 (54)	53(37)	2 (1)	4.32±1.01

I participate in disaster management simulations or exercises at my workplace (e.g. clinic, hospital) regularly.	0	1 (1)	23 (16)	66 (46)	48(34)	4(3)	4.22±0.85
In my opinion, I have preparedness for disaster management.	0	7 (5)	32 (23)	63 (44)	37(26)	3(2)	3.98±0.73
I will be trusted as a key leadership figure in my community in a disaster situation.	51 (36)	28 (20)	21 (15)	31 (22)	10 (7)	1(1)	2.46±0.27
Family Readiness in Facing Disasters							**4.86±1.60**
I have a personal/family emergency response plan when in a disaster situation	0	0	3 (2)	16 (11)	119 (84)	4(3)	4.87±1.66
I have an agreement with loved ones and family members about how to carry out a personal/family emergency response plan.	0	1 (1)	4 (13)	19 (13)	111 (78)	7(5)	4.84±1.53
Patient Management During Disaster Response							**3.79±0.79**
I am able to overcome the general symptoms & reactions of victims who are still surviving in a disaster situation, which are affective, behavioral, cognitive and physical.	0	1 (1)	21 (15)	100 (70)	19 (13)	1(1)	3.99±1.09
I feel confident in providing education on stress and abnormal disorders related to trauma to patients.	0	3 (2)	32 (23)	75 (53)	32 (23)	0	3.96±0.85
I was able to identify indicators of potential mass exposure as evidenced by the presence of a group of patients with similar symptoms.	1 (1)	4 (3)	20 (14)	82 (58)	34(24)	1(1)	4.04±0.92
As a registered nurse, I feel confident being a rescue manager or coordinator.	1 (1)	12 (8)	64 (45)	44 (31)	21(15)	0	3.51±0.61
I feel confident that I am able to care for patients independently without doctor supervision in a disaster situation.	1 (1)	6 (4)	66 (46)	40 (28)	28(20)	1(1)	3.64±0.63
I feel confident working as a triage nurse practitioner & setting up temporary clinics in disaster situations	0	12 (8)	58 (41)	49 (35)	21(15)	2(1)	3.60±0.61
As a registered nurse, I am confident in my abilities as a specialist direct and lay service provider in a disaster situation.	0	3 (2)	41 (29)	79 (56)	19(13)	0	3.80±0.87
I feel confident carrying out emergency response plans, evacuation procedures, and other similar functions.	2 (1)	3 (2)	37 (26)	66 (46)	31(22)	0	3.79±0.76

Notes: SD: Strongly Disagree; D: Diasagree; SWD: Kurang Somewhat Disagree; NAD: Neither Agree or Dosagree; A: Agree; SA: Strongly Agree

DISCUSSION

This study assessed the disaster preparedness of nurses at Muhammadiyah Pekajangan Pekalongan Islamic Hospital through a descriptive survey of 142 respondents. The findings provide a detailed overview of demographic characteristics, preparedness levels, and key gaps in knowledge, skills, and disaster response capabilities.

Most nurses worked in the inpatient department (62%), with fewer assigned to outpatient, emergency, or surgical units. This distribution suggests that disaster preparedness initiatives must extend beyond emergency care units to ensure comprehensive hospital-wide response capacity. Regarding disaster preparedness levels, the majority of nurses (64.1%) reported moderate preparedness, while 35.9% indicated good preparedness. Notably, none of the respondents fell into the low-preparedness category. These findings are consistent with earlier studies conducted in other Indonesian regions. For example, Alamsyah et al. (17)reported that nurses in Bengkulu hospitals also exhibited moderate disaster-related competencies, and Husna et al. (18) found similar results among nurses in Banda Aceh following the 2004 tsunami.

A deeper analysis of the Disaster Preparedness Evaluation Tool (DPET) subcategories revealed both strengths and areas of concern. Overall knowledge was moderate (Mean = 4.00 ± 0.82), with most participants expressing strong interest in disaster-related training. High agreement levels (76–84%) regarding the

importance of (19,20) education reflect a positive attitude toward learning. However, only a minority had practical tools or strategies in place—for instance, only 7.7% had established medical contact lists, and 22% understood the local disaster response system. This suggests a lack of structured orientation or communication pathways between nurses and local authorities.

Skills in disaster management showed critical gaps (Mean = 3.75 ± 0.72). While knowledge of triage principles was reasonably strong (Mean = 4.32), actual participation in drills and simulations was limited. Only 28% of respondents felt prepared for disaster management, and just 7.7% believed they would be trusted as community leaders in crisis situations. These findings point to limited experiential learning and underdeveloped leadership training—key issues also highlighted by Ahayalimudin & Osman (21) in their Malaysian study on disaster preparedness. Interestingly, family readiness was high (Mean = 4.86 ± 1.60), with 87% having personal/family emergency response plans and 83% having discussed these plans with loved ones. This indicates that nurses prioritize safety at the personal level, which can indirectly contribute to professional readiness by reducing anxiety about family welfare during disaster deployment (22-24).

One of the most concerning findings emerged in this subscale (Mean = 3.79 ± 0.79). Fewer than 25% of nurses reported confidence in managing disaster victims' psychological and physical needs. Confidence in trauma-related education (21%), triage and clinic setup (16%), and specialized disaster roles (13%) was also low. These figures underscore a pressing need for competency-based training focused on patient management during emergencies. Simulation exercises, case-based learning, and role-play activities could be integrated into continuing education curricula to close these gaps. Collectively, the findings suggest that while general awareness and positive attitudes exist, substantial gaps remain in applied disaster preparedness among hospital nurses. Addressing these deficits requires institutional commitment to structured and ongoing disaster training programs, improved communication with local emergency agencies, and stronger emphasis on leadership and triage competencies.

Limitations

This study has several limitations that must be considered when interpreting the findings. First, it employed a cross-sectional design at a single private hospital, which limits the generalizability of the results to other healthcare settings, including public hospitals or facilities in rural or less-resourced regions. Second, the use of self-reported questionnaires may have introduced social desirability bias, as participants might overestimate their preparedness. Third, the study did not explore the influence of previous disaster experience or prior training attendance on preparedness levels, which could have provided richer contextual insights. Lastly, while the DPET tool is comprehensive, the reliance on quantitative data alone may overlook nuanced perceptions and barriers related to preparedness, which could be explored in future qualitative research.

Clinical Implications

The findings of this study underscore the critical need for tailored disaster preparedness training in hospital settings, particularly for nurses. Institutions should invest in structured training programs that integrate simulation-based learning, triage decision-making, and interprofessional emergency drills. The low confidence in patient management and leadership during disasters indicates the necessity of competency-based curricula in both undergraduate and continuing professional development programs. Furthermore, developing clear communication pathways with local emergency response systems and providing updated contact protocols can enhance hospital-wide preparedness. Strengthening disaster preparedness is particularly essential for hospitals situated along evacuation routes or in high-risk zones, such as Muhammadiyah Pekajangan Pekalongan Islamic Hospital.

CONCLUSION

This study assessed the disaster preparedness of nurses at Muhammadiyah Pekajangan Pekalongan Islamic Hospital and found that while most nurses demonstrated moderate levels of preparedness, critical gaps remain in disaster management skills and patient care competencies during emergencies. Although nurses showed strong interest in disaster training and had high levels of family

preparedness, their confidence in managing disaster-related psychological and clinical needs was limited. Notably, participation in simulation activities and leadership roles was minimal. These findings highlight an urgent need to strengthen institutional policies and training infrastructure to improve disaster preparedness among nurses. Investments in targeted, experiential training—especially in triage, emergency planning, and psychosocial care—are essential for equipping nurses with the skills necessary to respond effectively during disasters. Future research should incorporate broader samples across different hospital types and explore longitudinal impacts of disaster education programs to build a more resilient nursing workforce in Indonesia.

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Author Contributions
AF: Conceptualization, data collection, formal analysis, manuscript drafting.
NM: Study design, methodology, supervision, manuscript review.
SU: Data interpretation, critical revision, final approval of the manuscript.
All authors have read and approved the final version.

Conflict of Interest Disclosure
The authors declare that they have no conflicts of interest related to this research or its publication.

Data Availability Statement
The data supporting the results of this study are available from the corresponding author upon reasonable request, ensuring confidentiality and ethical compliance.

REFERENCES

1. Tierney K, Oliver-Smith A. Social dimensions of disaster recovery. Int J Mass Emerg Disasters. 2012;30(2):123–46.
2. Ida R, Widiyantoro S, Gunawan E, Sunarti E, Marliyani GI, Saud M. The Use of Digital Media and Modes of Communication of Affected People: A Case Study of Earthquakes in East Java, Indonesia. Journal of Disaster Research. 2022;17(6):1037–47.
3. Lestari DAS. Kesiapan perawat gawat darurat rumah sakit umum daerah Kabupaten Bandung dalam menghadapi bencana. Jurnal Keperawatan'Aisyiyah. 2017;4(2):23–31.
4. Pelupessy WV, Silverman RM. Exploring Indonesian coastal communities' responses to the 2019 Ambon earthquake and preparedness for future disasters. International Journal of Disaster Risk Reduction. 2024;114:104961.
5. Pandey N, Rani P, Kundu S. An Intelligent Disaster Management System: Integrating Technology for Effective Response and Recovery. In: 2025 3rd International Conference on Intelligent Systems, Advanced Computing and Communication (ISACC). IEEE; 2025. p. 1107–12.
6. Depkes RI. Pedoman Manajemen Sumber Daya Manusia (SDM) Kesehatan dalam Penanggulangan Bencana. PPSDM Kesehatan, Jakarta. 2006;
7. Bencana BNP. Annual report. BNPB. 2020;
8. Johnson PM, Baroud H, Brady CE, Abkowitz M. Who contributes to disaster preparedness? Predicting decision making in social dilemmas pertaining to community resilience. Risk Analysis. 2023;43(12):2659–70.
9. Kemenkes RI. Profil Kesehatan Indonesia tahun 2023. 2023.
10. Dyah T, Dwi Martha A, Elisa T. Kesiapsiagaan Masyarakat dalam Menghadapi Bencana Kebakaran di Kota Banjarmasin (Community Preparedness to Prevent Fire Disaster in the City of Banjarmasin). Jurnal Keperawatan Suaka Insan. 2022;
11. Ramadhan MochF, Susilo E, Kanto S. Konstruksi Sosial Upacara Ritual Lohor Masyarakat Adat Dalam Menghadapi Bencana di Desa Bayan Kabupatrn Lombok Utara. Brawijaya Journal of Social Science. 2024;3(02):179–94.
12. Handoyo FW, Dalimunthe SA, Purwanto P, Suardi I, Yuliana CI, Mychelisda E, et al. Enhancing Disaster Resilience: Insights from the Cianjur Earthquake to Improve

Indonesia's Risk Financing Strategies. Sage Open. 2024;14(2):21582440241256776.
13. Setia MS. Methodology series module 3: Cross-sectional studies. Indian J Dermatol. 2016;61(3):261–4.
14. Etikan I, Musa SA, Alkassim RS. Comparison of convenience sampling and purposive sampling. American journal of theoretical and applied statistics. 2016;5(1):1–4.
15. Charan J, Biswas T. How to calculate sample size for different study designs in medical research? Indian J Psychol Med. 2013;35(2):121–6.
16. Wang J, Lu S, Sun X, Wang F, Wan M, Chen H, et al. Psychometric evaluation of the Disaster Preparedness Evaluation Tool©(DPET) on emergency nurses in mainland China: two cross-sectional studies. Disaster Med Public Health Prep. 2022;16(3):1083–90.
17. Alamsyah A, Samsir S, Handayani DE, Halimah N, Sulasri S. Panduan Praktik Klinik Keperawatan Gawat Darurat. 2021;
18. Husna C, Hatthakit U, Chaowalit A. Do knowledge and clinical experience have specific roles in perceived clinical skills for tsunami care among nurses in Banda Aceh, Indonesia? Australasian Emergency Nursing Journal. 2011;14(2):95–102.
19. Appleby-Arnold S, Brockdorff N, Callus C. Developing a "culture of disaster preparedness": The citizens' view. International journal of disaster risk reduction. 2021;56:102133.
20. Patel RK, Kermanshachi S, Namian M. A socioeconomic-based analysis of disaster preparedness, awareness and education. In: Creative Construction e-Conference 2020. Budapest University of Technology and Economics Budapest, Hungary; 2020. p. 76–84.
21. Ahayalimudin N, Osman NNS. Disaster management: Emergency nursing and medical personnel's knowledge, attitude and practices of the East Coast region hospitals of Malaysia. Australasian emergency nursing journal. 2016;19(4):203–9.
22. Tulungen AA, Rantung GAJ. Kesiapsiagaan Mahasiswa Keperawatan Universitas Advent Indonesia dalam Penanggulangan Bencana. Nutrix Journal. 2024;8(1):48–56.
23. Pramithasari ID. Gambaran kinerja perawat dalam mendokumentasikan asuhan keperawatan berbasis komputer. Jurnal Keperawatan Muhammadiyah. 2016;1(1).
24. Calisanie NN, Ramdani R, Nuriyah M. Implementation of Disaster Preparedness in Hospitals by Emergency Department Nurses. Jurnal Keperawatan Komprehensif (Comprehensive Nursing Journal). 2024 Oct 31;10(5):587-93.