

Psychological Adjustment after the Cianjur Earthquake: Exploring the Efficacy of Psychosocial Support and Collaborative Leadership

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Abstract. This study examines the psychological adjustment of disaster workers in relation to differences in stress management training, along with factors associated with psychosocial support and collaborative leadership during earthquake emergency response operations in Cianjur, West Java, on November 21, 2022. Using a mixed-methods approach, we recruited Indonesian Red Cross staff and volunteers who were assigned to the disaster response team after the earthquake. Data collection involved 59 disaster workers selected through accidental sampling. We measured the levels of perceived stress, anxiety, and depression, as well as professional quality of life, while also observing psychosocial support and collaborative leadership. Notably, the majority of respondents (79.7%) had never received stress management training for disaster workers before their assignment to the Cianjur earthquake. Untrained disaster workers exhibited higher levels of stress and burnout and lower levels of compassion satisfaction. Significant differences in perceived stress, depression, and burnout were observed between trained and untrained disaster workers regarding stress management. However, no differences were found in other variables (anxiety, secondary traumatic stress, and compassion satisfaction). This research revealed that volunteers who received a briefing generally reported feeling happier, with scores of 2.07 points for overall happiness, 1.82 points for satisfaction in their role as disaster helpers, and 1.86 points for their happiness in being able to assist people in disaster areas. On the other hand, volunteers who maintained intense communication with friends and family were relatively better at controlling stress and maintaining happiness, with a score of 2.27 points for those who stayed in touch with family and 2.06 points for those who interacted intensely with fellow volunteers. These findings emphasize the importance of friends and peer support, as well as family support, for disaster workers in handling double disasters. Overall, the results suggest that the mental health of disaster workers deployed in natural disasters during the Covid-19 pandemic requires further consideration, with stress management training being considered as a preventive program. This research also reveals the importance of the collaborative leadership paradigm in supporting disaster activism. Furthermore, there is a need for further research that delves into the cultural aspects of understanding the mental health of disaster workers.

1. Introduction

Natural disasters that occurred during the Covid-19 pandemic represent a double disaster phenomenon, as exemplified by the Cianjur earthquake on November 21, 2022 [1]. In the Cianjur region, the earthquake's tremors were also felt in areas such as Garut, Sukabumi, Cimahi, Lembang, Greater Jakarta, Bandung, and the surrounding islands. The earthquake resulted in an estimated 310 fatalities, 1,000 injuries, 20 individuals reported as missing, and the displacement of approximately 58,000 people [2].

This earthquake struck during the Covid-19 pandemic, a time when Covid-19 had already affected more than 676 million people [3]. Recent studies have observed that the Covid-19 pandemic led to significant psychological distress and signs of mental illness in the adult general population. Similarly, publications addressing the risks and challenges to mental health following earthquakes have emerged in various countries, including Taiwan [4], Iran [5], Haiti [6], among others. While the immediate impact of the

disaster was felt by those directly affected [7], it also had a significant impact on the mental and physical health of disaster volunteers [8].

Disaster workers are individuals tasked with executing emergency responses, including providing the necessary assistance and support for victim recovery [3]. These responses often take place in unforeseen and perilous circumstances, carrying the risk of distress and various psychological issues, such as Post-Traumatic Stress Disorder (PTSD), which are inherent in the nature of their work [9]. For disaster workers assigned to respond to earthquakes during the Covid-19 pandemic, they are confronted with a double crisis. The significance of preserving mental health becomes particularly crucial in such stressful situations [2].

Publications addressing various mental health problems among disaster responders are prevalent [3], [10]–[16]. These responders often work in resource-scarce environments, where the risk of experiencing traumatic stress and burnout is well-documented in stressful situations [1]. Symptoms such as stress, anxiety, and depression have been associated with

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disaster workers [17]. In an emergency context, one crucial aspect to consider is their professional quality of life [17], which includes components like compassion satisfaction, burnout, and secondary trauma, all of which will be discussed in this paper.

Mental health and psychosocial support (MHPSS) programming is increasingly considered a core component of humanitarian response requiring multi-sectoral collaboration and a tiered framework of intervention [18]. psychosocial support (PSS) emphasizes prevention of disorder and promotion of wellbeing through reducing risk factors and strengthening resilience and protective factors [18]. Furthermore, to support responders, there exists a range of policies and legislation designed to guide their work [19]. However, in reality, there are few, if any, specific training programs aimed at assisting decision-making in a disaster setting [11].

This issue is closely related to collaborative leadership, which revolves around the ability to select the "best solution" to implement in practice. Collaborative leadership endeavors to foster a work environment that is inclusive, creative, and solution-oriented. The emphasis in this leadership approach is on promoting collective efforts by prioritizing "us" over "me" [20]. Collaborative leadership plays a crucial role in ensuring that there is sufficient emotional and psychological support available for earthquake victims and the disaster management team. Conversely, stress management holds paramount importance in helping individuals overcome feelings of anxiety, trauma, uncertainty, and worry. Collaborative leaders work diligently to create a supportive and welcoming environment, facilitate counseling and support sessions, and engage experts in stress management to assist affected individuals in better coping with stress and trauma.

In summary, disaster situations, whether they are natural disasters like earthquakes or the Covid-19 pandemic, have been linked to psychological issues. In our study, we concentrate on psychological adjustment, professional quality of life, and collaborative leadership. Notably, while numerous published studies have examined the risks associated with either earthquakes or Covid-19 individually, none have assessed the psychological adjustment, psychosocial support, and collaborative leadership among disaster workers who are mobilized in the midst of a double crisis, which represents the compounded risk arising from the concurrent occurrence of both disasters.

Study Aims and Hypothesis

We conducted a study in the case of disaster workers mobilizing during earthquake emergency response operations in Cianjur, West Java, Indonesia. The primary aims of this study are as follows: (1) to analyze differences in psychological adjustment, including perceived stress, anxiety, and professional quality of life, between trained and untrained disaster workers in the context of stress management; (2) to analyse psychological support experienced by disaster workers; (3) to analyze collaborative leadership within the study.

Regarding the first research objective, the main hypothesis is: "There are differences in the psychological adjustment of trained and untrained disaster workers in relation to stress management."

Minor Hypothesis is:

H1: There is a difference in the stress between trained and untrained disaster workers on stress management

H2: There is a difference in the anxiety between trained and untrained disaster workers on stress management

H3: There is a difference in the depression between trained and untrained disaster workers on stress management

H4: There is a difference in the burnout between trained and untrained disaster workers on stress management

H5: There is a difference in the secondary traumatic stress between trained and untrained disaster workers on stress management

H6: There is a difference in the compassion satisfaction between trained and untrained disaster workers on stress management.

2. Method

2.1 Participants

The target population for this study consisted of disaster workers, specifically, disaster staff and volunteers engaged in the management of the Cianjur Earthquake disaster in 2022. Quantitative data collection was conducted by selecting 59 disaster workers through accidental sampling. This research employed in-depth interviews and Focus Group Discussions (11 participant). Participants included staff and volunteers who were actively involved in volunteer activities from January to April 2023.

2.2 Study Design

This study employed a cross-sectional survey approach in conjunction with a mixed-method study. Accidental sampling was carried out at an Indonesian Red Cross disaster worker's camp. Surveys and quantitative analysis were utilized to gather information pertaining to psychological adjustment, while observation, interview and focus group discussions were conducted to assess psychosocial support and collaborative leadership.

Furthermore, it is worth noting that the research received approval from the Health Research Committee of the University of Jember, Faculty of Nursing, under Protocol Number 015/UN25.1.14/KEPK/2023 and was granted ethical clearance.

2.3 Measures

Research instruments consist of the demographic questionnaire, Psychological Adjustment questionnaire with a Likert scale (PSS, HADS, And PROQOL); closed

open-ended questionnaire for psychosocial support and collaborative leadership.

2.3.1 Demographic Information

A questionnaire was developed to collect sociodemographic information, which included personal details such as sex, age, and marital status. It also gathered information about participants' work, specifically their current mobilization status as disaster responders, and their experiences with psychological support, categorized as whether they had received a pre-assignment briefing or had not received one. Additionally, the questionnaire captured participants' assignment status at the time of data collection.

2.3.1.1 Psychological Adjustment

2.3.1.2 Perceived Stress Scale (PSS)

The questionnaire comprises 10 statements aimed at assessing the current condition of the respondent. It employs a Likert scale with 5 response choices, ranging from 0 (never) to 4 (very often). It is important to note that for positively stated items (items 4, 5, 7, and 8), the responses must be reversed when calculating the score. The total score for this instrument ranges from 0 to 40. Respondents are categorized as follows:

- Low category: Total score of 0-13
- Moderate category: Total score of 14-26
- Severe category: Total score of 27-40 [13].

2.3.1.3 Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) is a questionnaire comprising 14 items designed to evaluate anxiety and depression levels [21]. This instrument has been employed in disaster research [17]; [22]. Out of the 14 items, 7 assess depression, and the remaining 7 measure anxiety. Respondents provide their answers using a Likert scale ranging from 0 to 3. The HADS categorizes individuals into three assessment categories:

- Normal: Scores ranging from 0 to 7
- Borderline abnormal or borderline cases: Scores ranging from 8 to 10
- Abnormal: Scores ranging from 11 to 21 [23].

2.3.1.4 Professional Quality of Life Scale

Professional Quality of Life is an instrument designed to assess burnout, secondary traumatic stress, and compassion satisfaction. It comprises 30 questions, each offering 5 possible Likert scale responses ranging from 1 (never) to 5 (very often). Each of these variables is measured separately within its corresponding sub-category, yielding a possible total score ranging from 10 to 50 for each sub-category. The assessment categories for each sub-category are as follows:

- Low: Scores ≤ 22
- Medium: Scores ranging from 23 to 41
- High: Scores ≥ 42 [24] [25].

2.3.2 Validity and Reliability

Validation of the Likert scale questionnaire was carried out with the Pearson/ product-moment correlation test. The trial was given to 30 respondents with the same background. Reliability test with an Alpha Cronbach's method. Discussion guide and list of question (Focus group discussion and interview) validated by content validation by expert judgment.

All the Psychological adjustment instruments proved to be valid with the test criteria $r_{count} \geq r_{table}$. R table (n=30) is 0.361.

Table 1. Instrument's Validity's Test

Aspect	Instrument Test	Item Number	Favorable/ Un favorable
Stress	PSS	1-10	Favorable
Anxiety	HADS	1; 3; 5; 7; 9; 11; 13	Favorable
Depression	HADS	2; 4; 6; 8; 10; 12; 14	Favorable
Burnout	PROQOL	1; 4; 8; 10; 15; 17; 19; 21; 26; 29	Favorable
Secondary Traumatic Stress	PROQOL	2; 5; 7; 9; 11; 13; 14; 23; 25; 28	Favorable
Compassion Fatigue	PROQOL	3; 6; 12; 16; 18; 20; 22; 24; 27; 30	Favorable

The reliability test analysis was declared reliable if Cronbach's Alpha value > 0.361 . The results of the reliability analysis are shown in the table 2.

Table 2. Instrument's Reliability's Test

Instruments	Cronbach Alphas
PSS	0.617
HADS	0.839
PROQOL	0.897

All instruments are declared reliable or consistent as tools in data collection.

2.4 Data Analysis

All statistical analyses were conducted using the Statistical Package for the Social Sciences (IBM Corp; Released 2010; IBM SPSS Statistics for Windows, Version 25.0). To examine the differences between

groups, specifically trained and untrained disaster workers in terms of stress management, regarding the psychological adjustment of disaster responders, a multivariate analysis of variance (MANOVA) was performed. The dependent variables in this analysis encompassed psychological adjustment factors, including perceived stress, anxiety, depression, burnout, secondary trauma, and compassion satisfaction. The between-subject factor was the level of training, distinguishing between trained and untrained disaster workers in stress management. Additionally, content analysis was employed to describe findings related to psychological support and collaborative leadership.

3. Results

A total of 59 respondents were obtained, and the socio-demographic is presented in Table 1. The majority are women (62,7%); single (74,6%); 18-25 years of age (71,2%); untrained disaster workers on stress management (79,7%) and ongoing assignment when data collection was carried out (93,2%).

Table 3. Demographic Characteristics of Study

Characteristics		N (%)
Sex	Male	37 (62.7)
	Female	22 (37.3)
Marriage Status	Single	44 (74.6)
	Married	15 (25.4)
Age	18-25	42 (71.2)
	26-35	4(6.8)
	36-45	8(13.6)
	>= 45	5 (8.5)
Experienced in Stress management training	Trained	12 (20.3)
	Untrained	47 (79.7)
Status on assignment period	Ongoing assignment	55 (93.2)
	Already finished for the assignment	4 (6.8)

The distribution of the variables may be considered as acceptably normal (Kolmogorov-Smirnov test) with test significant criteria Asymp. Sig 2 tailed > 0.05.

Table 4: Normal Distribution of PSS, HADS and PROQOL

Instrument	Asymp. Sig 2 Tailed
Perceived Stress Scale	0.321
HADS	0.375
PROQOL	0.138

3.1 Assessment of Psychological Adjustment of Disaster Workers

At the moderate and high/abnormal levels (total), untrained workers tend to experience higher levels of perceived stress, anxiety, burnout, and secondary traumatic stress compared to trained disaster workers who have undergone stress management training. However, there is a notable difference in the variable of depression, where the number of borderline abnormal and abnormal cases remains consistent regardless of whether the worker has received training or not. It is worth highlighting that both trained and untrained workers predominantly report low levels of compassion satisfaction. The results of the univariate analysis are presented in Table 5.

Table 5: Description of Psychological Adjustment of Disaster Worker

Instrument	Trained Disaster Workers on Stress Management (%)	Untrained Disaster Workers on Stress Management (%)
Perceived Stress Scale		
Low	50	15
Moderate	0	77
High	50	9
HADS (Anxiety)		
Normal	58	15
Borderline abnormal	25	77
Abnormal case	17	9
HADS (Depression)		

Normal	50	45
Borderline abnormal	0	30
Abnormal case	50	26
PROQOL (Burnout)		
Low	33	13
Moderate	67	87
High	0	0
Secondary Traumatic Stress		
Low	17	11
Moderate	83	77
High	0	13
Compassion Satisfaction		
Low	67	74
Moderate	33	23
High	0	2

To assess significant differences in psychological adjustment between trained and untrained disaster workers in stress management, a MANOVA was conducted. The dependent variables considered in this analysis included perceived stress, anxiety, depression, and professional quality of life. The between-subject factor variable distinguished between trained and untrained disaster workers in stress management.

The results revealed significant differences in perceived stress, depression, and burnout between trained disaster workers and untrained disaster workers in terms of stress management. However, there were no significant differences observed for the other variables, namely anxiety, secondary traumatic stress, and compassion satisfaction.

Table 6. Mean differences between disaster workers trained or untrained of Stress Management (Post Hoc)

	Trained Disaster Worker on stress management (Mean)	Untrained Disaster Worker on stress management (Mean)	Sig.	Accepted Hypothesis
Perceived Stress**	16.79	19.35	0,000	H1
Anxiety**	6,75	8.92	0.635	H0
Depression*	8,58	9.80	0.005	H3
Burnout*	25,05	27.77	0.001	H4
Secondary Traumatic Stress*	30.91	31.07	0.855	H0
Compassion Satisfaction*	20.61	21.20	0.518	H0

*Benferoni, homogeneity test with sig. value > 0.05

**Games Howel, homogeneity test with sig. value < 0.05

3.2 Experienced Receiving Psychosocial Support

Most of disaster workers receive a pre-assignment briefing before being assigned to the Cianjur disaster management in 2022 as psychosocial support. It is presented on table 7.

Table 7. Pre-Assignment Briefing before being assigned to disaster response.

	N (%)
Pre assignment briefing before being assigned to disaster response team	
Received a pre-assignment briefing.	44 (75.9)
Did not receive a pre-assignment briefing.	14 (24.1)

The research findings indicated that volunteers who received pre-assignment briefings generally reported higher levels of happiness, scoring an average of 2.07 points. They also expressed contentment in their roles as disaster helpers, with an average score of 1.82 points, and a sense of fulfillment in being able to assist people in disaster-stricken areas, averaging 1.86 points. On the other hand, volunteers who engaged in intensive communication with friends and family seemed to have better stress management skills and reported higher

levels of happiness, scoring an average of 2.27 points, particularly those who maintained communication with their families. Those who interacted intensely with fellow volunteers also scored positively, with an average of 2.06 points.

The participants in the study shared that they experienced strong emotions related to happiness and received significant support from both their families and organizations during their disaster response assignments.

“Before the assignment I received a technical briefing, and this helped in the field.” (FGD Result, 8 February 2023)

“My family provides support to me. Knowing that I was helping earthquake victims, and I was allowed not to go home. It's different if I just play.” (FGD Result, 8 February 2023)

“My family knows that I help others. Even though I don't get money from it, I can be useful for other people. And it's fun.” (FGD Result, 8 February 2023)

Table 8: Assessment of the support provided (Mean)

Condition	Feeling Happy	Happy to be disaster helpers	Happy to be able to help people in disaster areas
Received a pre-assignment briefing.	2,07	1,82	1,86
Did not receive a pre-assignment briefing.	2,07	1,43	1,64

3.3 Collaborative Leadership

Collaborative leadership in the context of handling the earthquake disaster in Cianjur played a role in coordinating the various parties involved in the response, including local government, NGOs, volunteers, the private sector, and the local community (FGD results). This is in line with [20] where the leadership developed involves stakeholders and facilitates and maintains existing interactions

Table 9: Parties that support disaster workers.

Who has been the most supportive of you personally during the current disaster deployment?	N	%
Myself	1	1,7%
Friends/ Team	16	27,1%
Family	15	25,4%
Friends/ Team and Family	8	13,6%
Organization/ Workplace	4	6,8%
All of them	1	1,7%
Noone	2	3,4%
	12	20,3%
TOTAL	59	100,0%

In general, friends/ team are the ones who the most supporter of disaster workers while they are carrying out their duties in a disaster (27.1%). On the other hand, family is also an important party in providing support (25.4%) which is followed by friends/team/family who are perceived as providing support (13.6%). Based on the findings, the existence of parties who provide support to disaster workers makes them feel happy and becomes emotional support during their assignment in a disaster.

Interviews with key informants indicated aspects related to personal values that strengthen their commitment during disasters. The primary value mentioned is the act of helping others regardless of the victims' backgrounds or the experiences they had before the disaster.

"I think there's a strong sense that emerges when a disaster strikes. Even though before the earthquake incident, we might have had conflicts or didn't even know each other, but disasters awaken a sense of brotherhood and a desire to help disaster victims." (Informant A)

Regarding support from colleagues or the team, essential aspects include empathy and tolerance.

"When on duty, we understand our colleagues. We know they might be tired or sad. We try to empathize with them. Even if someone gets angry with me, I try to be patient, as they might be going through some problems." (Informant B)

The organizational efforts related to supporting disaster workers include specific programs designed by the psychosocial department to assist volunteers on duty.

"For our volunteers, we have a database of affected volunteers, and our support goals revolve around them. For the volunteers involved, we usually have briefing sessions for both physical and mental well-being. We have sessions to help volunteers relieve stress, including sports and games, for which we provide equipment like badminton, volleyball, and card games. We also have morning exercise sessions every Friday. We have weekly religious gatherings and invite religious scholars to deliver sermons." (Informant B)

Through the existing findings, it can be observed that in addition to the role of leaders within the structural framework of organizations, there are also leaders in informal contexts. These leaders emerge within volunteer groups or community relationships that are not directly associated with the volunteer structure. In this regard, such leaders may include neighborhood association leaders (Ketua Rukun Tetangga), community leaders (Ketua Rukun Warga), religious leaders (Ustadz, Kyai), and others. Their presence provides support to volunteers through more informal dialogues, which indirectly contribute to boosting morale and reducing stress levels.

4. Discussion

The COVID-19 pandemic has been associated with various psychological challenges, including stress among healthcare workers [26], stress and anxiety in medical students [27], and stress and post-traumatic stress disorder (PTSD) in nurses providing care to COVID-19 patients [28]. Alongside these challenges, one of the many difficulties posed by the pandemic was the disruption it caused to staff members and procedure scheduling [29]. The literature suggests that natural disasters occurring during the COVID-19 pandemic create a double crisis, compounding the risk in a stressful situation that has a significant impact on psychological well-being and leads to specific behavioral changes [27] [30]. The present study aims to assess the prevalence of psychological adjustment among trained and untrained disaster workers in stress management during these challenging circumstances.

The psychological adjustment outcomes observed in this study were in line with those reported in the existing literature [31][32][33]. Particularly in the context of earthquake disaster response, the implementation of collaborative leadership entails effective coordination and cooperation among various stakeholders. Collaborative leadership assumes a pivotal role in ensuring the provision of adequate emotional and psychological support to both earthquake victims and the disaster management team [34].

Collaborative leaders are dedicated to creating a supportive and welcoming environment. They facilitate counseling and support sessions and engage experts in stress management to assist individuals in coping with stress and trauma effectively. Stress management is a critical aspect of overcoming feelings of anxiety, trauma, uncertainty, and worry, and collaborative leaders are instrumental in providing this support.

In the context of managing the earthquake disaster in Cianjur, collaborative leadership plays a crucial role in coordinating various stakeholders involved in the response. This includes local government entities, non-governmental organizations (NGOs), volunteers, the private sector, and the local community, as indicated by the findings from focus group discussions (FGD).

Collaborative leaders excel in promoting efficient information exchange, resource pooling, identification of necessary expertise, and coordination of response efforts. Moreover, collaborative leadership encourages active community participation in decision-making processes, ensuring that disaster response aligns with local needs and aspirations.

Handling the earthquake disaster in Cianjur involves a range of efforts such as evacuation, medical assistance, aid distribution, relocation, recovery, and reconstruction. Collaborative leadership guarantees that all stakeholders are actively involved in the planning and execution of these crucial steps.

Furthermore, stress management is an integral component of earthquake disaster management. Collaborative leadership endeavors to provide emotional and psychological support to both victims and disaster response workers. This collaborative effort enhances the response's effectiveness and assists

communities in better managing the challenges brought about by the earthquake.

The interesting finding that emerged from this study is how to understand the stress experienced by disaster workers in disaster management in Cianjur. The presence of habitual values, a shared humanitarian mission (mutual assistance), and the constructed values of religiosity suggest that the understanding of stress needs to be examined from a cultural aspect [35]. This represents a limitation of the research, as it did not specifically delve into the values of local wisdom and culture in understanding the psychological adjustment of disaster workers. This could serve as input for further research.

5. Conclusions

Our findings underscore the heightened risk of stress among disaster responders working in natural disaster situations during the COVID-19 pandemic. This study revealed significant differences in stress, depression, and burnout levels between trained and untrained disaster workers in stress management. However, it also highlighted that anxiety, secondary traumatic stress, and compassion satisfaction did not exhibit significant differences. Utilizing a mixed-method approach, the research unveiled that psychosocial support was provided through pre-assignment briefings, stress management training, and emotional support from various sources, including friends, peer support, and family.

Taken together, these results emphasize the critical need for further consideration of the mental health of disaster responders. Targeted prevention and intervention programs are essential, with a particular emphasis on stress management training for disaster workers. Furthermore, volunteer activities in disaster management are also associated with collaborative leadership. Complex volunteer activities require direction that is not singular, including stress management. Effective leadership does not only emerge from formal leaders within organizations, but also through informal leadership within groups and within the community that is culturally perceived as influential.

Consequently, disaster worker assignment policies should incorporate this competency to mitigate the impact of disasters on these workers. Furthermore, there is a need for further research that delves into the cultural aspects of understanding the mental health of disaster workers. Further research should explore action research approaches to enhance the mental health of disaster workers.

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