



RESEARCH ARTICLE

Integrating Traumatic Stress Care and Disaster Risk Reduction Education for Children: Teachers' Roles after the Great East Japan Earthquake

Yoshiki Tominaga^{1*}, Yuki Sadaike², Kunika Kakihara³, Eizaburo Tanaka⁴, Takeshi Sato⁵

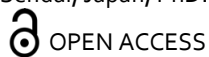
¹Graduate School of Disaster Resilience Governance, University of Hyogo, Kobe, Japan, PhD, Clinical psychologist

²Faculty of Regional Studies, Tohoku Gakuin University, Sendai, Japan, PhD

³Department of Psychology and Applied Communication, Hokusei Gakuen University, Hokkaido, Japan

⁴Graduate School of Arts and Sciences, The University of Tokyo, Komaba, Japan, MD, MPH, PhD

⁵International Research Institute of Disaster Science, Tohoku University, Sendai, Japan, PhD.



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ABSTRACT

Disaster risk reduction education in areas affected by natural disasters serves a dual role: while it is essential for safeguarding lives in future emergencies, it may also inadvertently trigger traumatic memories among children. This study had two primary objectives. First, to examine whether disaster risk reduction education triggers emotional instability in children living in disaster-stricken areas. Second, to explore the relationship between teachers' perceived self-efficacy in traumatic stress care and their experiences with disaster risk reduction education. Survey responses from 622 teachers in regions affected by the Great East Japan Earthquake were analyzed. The key findings were as follows: (1) 73% of teachers in tsunami-affected coastal areas and 43% of teachers in inland areas not directly affected by the tsunami reported that some children became emotionally unstable during disaster prevention education; (2) a significant correlation was observed between teachers' traumatic stress care self-efficacy and the implementation of disaster risk reduction education that included mental health support components. The challenges associated with expressing and sharing disaster experiences are discussed within the frameworks of trauma-informed care and disaster risk reduction education.

Keywords: Disaster Risk Reduction Education, Traumatic Stress Care, Teachers, Great East Japan Disaster, Tsunami

Introduction

Traumatic stress reactions following disasters can generally be categorized into two types: those that naturally resolve over time, and those that progress into stress-related disorders, such as post-traumatic stress disorder (PTSD)¹. In response, school-based interventions and psychotherapeutic approaches have been developed to support children affected by disasters²⁻³. These interventions typically occur during the post-disaster phase, under the assumption of a safe and stable environment. However, in the case of earthquakes, strong aftershocks may continue for an extended period, and safety cannot always be assured. Consequently, disaster risk reduction education—such as evacuation drills—is often conducted soon after the disaster to protect children from ongoing threats.

Psychological First Aid (PFA)⁴, a guideline for acute mental health care following disasters and conflicts, recommends that victims first recover from experiences essential for restoring a sense of safety and security, and be protected from triggers that may reactivate traumatic memories. The guideline identifies aftershocks as triggers. However, strong aftershocks can themselves be life-threatening events and thus cannot be regarded as entirely safe.

In a similar vein, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT)⁵ advises postponing group activities that may trigger traumatic responses—such as evacuation drills, disaster recollections, or discussions involving tsunami-related themes—until the class has reached a stable emotional state. Special consideration should be given to children who have lost loved ones or who show symptoms of PTSD.

Disaster risk reduction education may act as a reminder/trigger for some children, bringing back traumatic memories of the disaster and causing psychological or physiological instability. Despite such concerns, empirical research on this phenomenon remains scarce.

While teachers in disaster-stricken areas conducted evacuation drills after schools reopened to help children protect themselves from future earthquakes or tsunamis, they were often heartbroken to witness some children exhibit intense emotional and physical reactions, such as crying, during these activities. An exception was observed at one elementary school where, despite holding an evacuation drill shortly after reopening, children did not exhibit strong psychological or physiological reactions. When the first author asked the teacher how the training was planned, the teacher explained that they first conducted a “calm walk” to explore evacuation routes, an activity that was a relieving experience for the children⁶. This example illustrates that the critical question may not be “when”

to conduct disaster risk reduction education in disaster-affected areas, but rather “how” it is conducted.

Although individuals possess an inherent capacity for psychological recovery following trauma, avoidance of traumatic expression or the internalization of guilt are recognized risk factors for the development of PTSD. Research indicates that sharing traumatic experiences with trusted individuals and gradually confronting avoided triggers can facilitate healing⁷. However, prematurely forcing such expression during the acute phase may increase avoidance behaviors and impede recovery.

MEXT⁸⁻⁹ recommends a variety of drills tailored to different scenarios—not only during class time but also during transitions such as commuting or cleaning. Both scheduled (announced) and surprise (unannounced) evacuation drills are encouraged. Unannounced drills were conducted in only 9 out of 44 prefectures and cities. Although such drills are considered effective in raising disaster awareness, particularly in areas not yet affected by disasters, their psychological impact in disaster-affected regions remains unclear.

Disaster risk reduction education is essential for safeguarding lives. However, as noted by PFA⁴ and MEXT⁵, such education in disaster-affected areas may trigger traumatic memories and destabilize children emotionally and physically.

Few studies have addressed the need to integrate disaster risk reduction education with psychological support. One exception is a survey in disaster-unaffected areas by Matsumoto¹⁰ of 1,160 elementary, junior high, and high schools in Aichi Prefecture, which examined stress management and disaster education during emergencies. While 89.3% of respondents agreed that stress management should be incorporated into disaster risk reduction education, only 8.3% reported actually implementing it.

However, there are no studies that have systematically investigated the integration of disaster prevention education and traumatic stress care in disaster-stricken areas.

In recent years, trauma from not only disasters but also violence, abuse, and crime has been recognized as a potential risk factor for PTSD and behavioral problems. Trauma-informed care emphasizes the need for widespread understanding of trauma and its effects in order to support the healing of those affected¹¹. It is grounded in three key practices: trauma-focused research, the application of trauma-informed interventions, and the integration of trauma survivors' narratives. Core principles of trauma-informed care include ensuring the safety of both providers and recipients, fostering mutual support among caregivers, and respecting cultural differences. Although scales have been developed to assess trauma-informed care

at individual, relational, organizational, and community levels¹², no specific scale currently exists to evaluate teachers' self-efficacy in trauma care within disaster-affected contexts.

Adults close to children, particularly teachers and parents, play a crucial role in recognizing and responding to trauma reactions. Their awareness and understanding may help reduce the risk of symptomatic expression and behavioral issues in children and promote faster recovery from stress-related disorders. As a result, trauma-informed care has gained attention as a best practice. It is believed that teachers—who are often in close contact with children—can contribute meaningfully to children's recovery and growth in disaster-stricken areas by enhancing their traumatic stress care skills. However, no instrument currently exists to assess individual teachers' traumatic stress care capabilities.

We hypothesize that the risk of stress-related disorders in children depends not only on when disaster risk reduction education is conducted in affected areas, but also on how it is conducted. In other words, when disaster risk reduction education is introduced as a safe activity and gradually paired with manageable reminders in a controlled and supportive manner, it may reduce stress-related risks and facilitate recovery. In contrast, unannounced drills conducted shortly after a disaster may increase avoidance behaviors and heighten the risk of developing stress disorders.

The aims of this study are as follows:

1. To investigate whether children in disaster-affected areas exhibited psychological or physiological reactions during disaster prevention education, based on a survey of teachers.
2. To explore the relationship between teachers' traumatic stress care self-efficacy and their awareness and experience of activities that integrate disaster risk reduction education with trauma-informed care.

Method

2.1. Participants

We collected responses from 633 teachers at public schools in Iwate Prefecture, which was affected by the Great East Japan Earthquake. After excluding incomplete data, 622 responses were included in the analysis. Participants had a mean age of 50.9 years (SD = 6.73, range = 23–64; $n = 614$; unknown = 8). Of these, 230 identified as female, 384 as male, and 4 did not report their gender. During the 2011 fiscal year, respondents comprised 311 elementary school teachers, 189 junior high school teachers, 78 high school teachers, 14 special needs school teachers, 18 Board of Education staff, 9 students, and 3 individuals whose affiliations were unknown. In terms of geographic distribution during FY2011, 206 respondents worked in tsunami-affected coastal areas,

83 in coastal areas not affected by the tsunami, and 333 in inland areas.

For nine years since September 2011, the Iwate Prefectural Board of Education has been conducting stress management classes (including trauma and stress checklists for psychological education, and training in positive coping methods such as relaxation techniques) once a year for approximately 140,000 students at public schools in Iwate Prefecture. The checklist covered hyperarousal, re-experience, avoidance, negative cognitions, decreased quality of life, and difficulty regulating positive emotions. These lessons were conducted with the cooperation of school counselors and teachers. The data were analyzed at the Iwate prefecture education center, and feedback was provided to each school for use in educational guidance.

2.2. Survey Content

2.2.1. Respondent Characteristics

We collected data on age, gender, school level in FY2011 and at the time of the survey, and work location in FY2011 (coastal or inland).

2.2.2. Traumatic Stress Care Self-Efficacy Scale

Participants were asked to self-assess their ability to explain traumatic stress care concepts to children. The items were based on five essential recovery experiences following major disasters (safety, connectedness, calmness, self-efficacy, and hope) as outlined by Hobfoll, et al.¹³, and on core principles of Prolonged Exposure Therapy for PTSD⁷, such as encouraging discussion of traumatic experiences and gradually confronting avoidance. The authors, who are a psychiatrist, three psychologists, and a disaster researcher, drafted the original content of the items, which were then examined by five school nurses and teachers from the disaster-stricken areas, who selected five items which they named "Traumatic Stress Care Self-Efficacy Scale." (See Table2). Each item was rated on a 6-point Likert scale: completely unable to explain(0), unable to explain(1), slightly unable to explain(2), slightly able to explain(3), able to explain(4), completely able to explain(5).

2.2.3. Awareness of Disaster Risk Reduction Education

Assuming that one year had passed since the disaster, participants were asked about eight types of disaster risk reduction activities:

- D1 Unannounced evacuation drill.
- D2 Unannounced earthquake and tsunami footage.
- D3 Expressing early disaster experiences.
- D4 Dealing with aftershocks and relaxation techniques.
- D5 Walking around evacuation routes in advance.
- D6 Psychological education on re-experiencing reactions.

- D7 Calming activities before and after evacuation drills.
- D8 The word earthquake means safety.

(See Table 3). D1 and D2 were created by the second author, who specialize in disaster research. D3 was drafted by the first author based on Tominaga et al.¹⁴. D4 was created by a school psychologist from the Kumamoto Earthquake in collaboration with the first author. D5 was based on practices from coastal-area teachers. D6–D8 were drafted by the first author after interviews with four school counselors in affected areas. The first author proposed the items, discussed them with the four authors, and revised the wording. Responses were measured on a 6-point Likert scale: 0=strongly disagree, 1=disagree, 2=somewhat disagree, 3=somewhat agree, 4=agree, 5=strongly agree.

2.2.4. Experience in Disaster Risk Reduction Education and Traumatic Stress Care

These are six items that asked teachers about their experiences of witnessing a child who became unstable during disaster prevention education and their experiences with disaster risk reduction and psychological support. E1 Witnessing a child who became unstable during evacuation drills, etc. E2 Practical experience in stress management classes. E3 Practical experience in relaxation and assertiveness classes. E4 Practical experience in expressing and sharing disaster experiences. E5 Practical experience in disaster prevention education classes other than evacuation drills. E6 Experience in planning evacuation drills, etc. All six items were scored using a three-point scale. E1 was scored as "none(1), 1-4 students(2), 5 or more students(3)," E2 and E3 were scored as "none(1), 1-4 times(2), 5 or more times(3)," and E4, E5, and E6 were scored as "none(1), assistant(2), main person in charge(3)".

2.3. Procedure

After consulting with the Board of Education in Iwate prefecture regarding the purpose and content of the study, two sets of questionnaires and return envelopes were mailed on February 1, 2020, to 542 public schools and relevant Boards of Education. The deadline for responses was March 15. We requested responses from licensed teachers, school nurses, and supervisors who had experience in planning and implementing post-disaster educational or mental health recovery efforts. One set of questionnaires was designated for individuals who had worked in coastal areas, and the other for those who had worked inland during FY2011. Participation was voluntary, responses were anonymous, and confidentiality was assured.

2.4. Analysis Methods

In addition to descriptive statistics, factor analysis and multiple regression analysis were conducted. Data analysis was performed using IBM SPSS Statistics (Version 25).

2.5. Research Ethics

This study was approved by the Research Ethics Committee of the University of Hyogo (Approval Number: 2019–13).

3. Results

3.1. Observations of Children Becoming Emotionally Unstable During Disaster Risk Reduction Education

Table 1 presents the number of teachers who witnessed children becoming emotionally unstable during evacuation drills and disaster prevention education in coastal (both tsunami-affected and unaffected) and inland areas during fiscal year 2011. A total of 72.8% of teachers from tsunami-affected coastal areas and 43.8% of those from inland areas reported observing emotionally unstable children. There were statistically significant differences in the distribution of cell populations ($\chi^2 = 61$, $df = 4$, $p < .001$)

Table.1

Number of Teachers Who Observed Children Become Emotionally Unstable During Disaster Risk Reduction Education (Fiscal Year 2011)				
Area	(1) None	(2) 1–4 Children	(3) 5 or More Children	Total
Coastline (affected by tsunami)	56 (27.2%)	103 (50.0%)	47 (22.8%)	206 (100%)
Coastline (not affected by tsunami)	32 (38.6%)	42 (50.6%)	9 (10.8%)	83 (100%)
Inland	187 (56.2%)	127 (38.1%)	19 (5.7%)	333 (100%)
Total	275 (44.2%)	272 (43.7%)	75 (12.1%)	622 (100%)

3.2. Factor Analysis of Traumatic Stress Care Self-Efficacy Scale

An exploratory factor analysis using the maximum likelihood method revealed that a one-factor structure was valid, based on the eigenvalue attenuation. The coefficient of determination was 71.0%. Internal consistency of the five trauma care items was high, with a Cronbach's alpha of $\alpha = .895$.

Table.2

Factor Loadings, Means, and Standard Deviations for Traumatic Stress Care Self-Efficacy				
Items	Factor Loading	Mean	SD	YES%
1. I can explain to children about the various changes in the mind and body (trauma reactions) that occur after a painful experience.	0.866	3.24	0.86	84.0%
2. I can explain to children, "When you remember something scary and feel anxious, what that reaction means and how to deal with it".	0.905	3.08	0.92	77.3%
3. I can explain to children that after a traumatic experience, continuing to strongly avoid safe stimuli (triggers) associated with the event is not good for mental health (it increases the risk of stress disorders).	0.698	2.51	1.07	50.5%
4. I can explain to my child that in caring for one's mind after a disaster, it is good for one's mental health to face the experience of the disaster little by little at one's own pace, based on a sense of security and good bonds between people.	0.756	3.2	0.92	82.9%
5. I can explain to my child that learning about mental care after a disaster also leads to learning about mental care after bullying, violence, and accidents.	0.745	3.08	0.97	76.7%

note;YES% ; % who answered "I can explain"

3.3. Multiple Regression Analysis of Traumatic Stress Care Self-Efficacy

A traumatic stress care self-efficacy total score was calculated by summing the raw scores of the five traumatic stress care items.

Table.3

Predictors of Traumatic Stress Care Self-Efficacy: A Multiple Regression Analysis of Disaster Risk Reduction Education Factors							
Variable	B	SE B	β	<i>p</i>	Me an	SD	Yes%
Constant	0.3	1.5	—	0.825	—	—	
Age	0.1	0	0.1	0.025	51	6.7	
Gender (0 = male, 1 = female)	0.1	0.3	0	0.627	—	—	
D1:I think it is a good idea to conduct evacuation drills without prior notice, since we do not know when a disaster (aftershocks, etc.) will occur.	0.1	0.1	0	0.583	3.2	1.7	65.7%
D2:I think it is effective for disaster risk reduction education to show footage of earthquakes and tsunamis without prior notice.	-0	0.2	-0	0.234	1	1.1	8.3%
D3:I think it is effective to have students express their experiences of the disaster (by writing essays, drawing pictures) as soon as possible after the disaster, in order to pass on the disaster risk reduction education to future generations.	0.2	0.1	0.1	0.148	1.9	1.2	29.5%
D4:I think it is effective to incorporate relaxation techniques into lessons, discuss how to deal with aftershocks, and share ways to prepare for them in situations where aftershocks are frequent.	0.4	0.2	0.1	0.021*	3.9	0.9	94.3%
D5:I think it is a good idea to conduct evacuation drills with prior notice, after activities such as walking along evacuation routes as a class.	-0	0.2	-0	0.515	3.7	1	90.8%
D6:I think it is a good idea to tell students in advance that remembering painful things and feeling anxious are natural reactions when conducting evacuation drills or disaster risk reduction education.	0.3	0.2	0.1	0.216	4.3	0.8	98.6%
D7:I think it is a good idea to practice calming yourself, such as breathing exercises, before and after evacuation drills or disaster risk reduction education.	0.5	0.2	0.1	0.018*	4	0.9	95.4%
D8:I think it's a good idea to tell students, "The words 'earthquake' ('tsunami') bring to mind painful memories, but the words themselves are safe because they don't destroy houses."	0.5	0.1	0.2	0.000**	2.6	1.4	55.0%
E1 : I have witnessed a child becoming unstable during an evacuation drill or disaster risk reduction class.	0.5	0.2	0.1	0.02*	1.7	0.7	55.8%
E2 : I have implemented a stress check for the mind and body in a class incorporating stress management (relaxation techniques, etc.).	0.9	0.3	0.2	0.001**	2.1	0.7	76.4%
E3 : I have implemented a class incorporating relaxation techniques and assertive expression as ways to deal with irritability, insomnia, etc.	0.8	0.3	0.1	0.003**	1.7	0.7	55.1%
E4 : I have held a class or activity on expressing and sharing disaster experiences.	0.6	0.2	0.1	0.003**	1.6	0.8	39.9%
E5 : I have implemented a disaster risk reduction education class other than an evacuation drill.	0.3	0.2	0.1	0.162	2.1	0.8	69.6%
E6 : I have planned an evacuation drill, disaster risk reduction class, or disaster prevention lecture.	0.4	0.2	0.1	0.022*	2.1	0.9	68.2%

note ; * $p < .05$, ** $p < .01$ YES% ; D1~D8=% who answered "I agree..." E1~E6=% who answered "I experienced."

Table 3 presents the results of a forced-entry multiple regression analysis. The independent variables consisted of items related to awareness and experience in disaster risk reduction education and traumatic stress care, while the dependent variable was traumatic stress care self-efficacy total score. The model was statistically significant at the 1% level ($p < .01$), with an R^2 of .295 and an adjusted R^2 of .276. Variance inflation factors (VIFs) ranged from 1.08 to 1.87, indicating no multicollinearity concerns.

4. Discussion

4.1 Witnessing Children's Instability During Disaster Risk Reduction Education

It has become evident that some children show signs of psychological instability during disaster risk reduction lessons and evacuation drills. In fiscal year 2011, there were more teachers from tsunami-affected coastal areas than from inland regions. As this study did not specifically target children directly affected by the disaster, the proportion of children exhibiting physical and mental reactions remains unclear. However, a stress check conducted by MEXT¹⁵ in May 2012, based on responses from approximately 330,000 parents and guardians in seven prefectures affected by the Great East Japan Earthquake, revealed that 5.3% in Iwate prefecture reported their children avoided topics or news related to the disaster, 9.5% in Miyagi prefecture, which experienced the highest number of child fatalities, and 8.9% in Fukushima prefecture, which experienced radiation contamination due to the nuclear accident. These results suggest that approximately 5–10% of children may require support during disaster risk reduction education.

4.2 Relationship between the Traumatic Stress Care Self-Efficacy Scale and experiences in psychological care and disaster risk reduction education

The five traumatic stress care self-efficacy items demonstrated strong factorial validity, with high factor loadings ranging from .698 to .905. Additionally, high internal consistency was confirmed via a strong Cronbach's alpha of .895. In multiple regression analysis, significant positive associations were observed between traumatic stress care self-efficacy total scores and the following variables: (E2) Practical experience with stress management classes, (E3) Practical experience in relaxation and assertiveness classes, and (E4) Practical experience in expressing and sharing disaster experiences. The item (D8), "Definition of terms such as 'earthquake' as triggers," received a low average score of 2.59, with 45.7% of respondents opposing the activity. D8 still showed a statistically significant positive effect at the 1% level. Moreover, (T3) "Strong avoidance of triggers increases mental health risks" had the lowest mean score among the five self-efficacy items. These results suggest that the most

difficult and important aspect of traumatic stress care is to "develop the ability of disaster-stricken children to distinguish between safety and danger." The word "earthquake" is safe, but it makes the child's heart pound and they cannot feel at ease. However, because the word "earthquake" is safe, the child's heart pounding decreases and they can feel at ease. The key is to develop the child's willingness to try things that remind them of safety, which can reduce their heart pounding, little by little, at their own pace⁷.

Although this study focused on teachers, the Traumatic Stress Care Self-efficacy Scale may also be effective for professional supporters such as school counselors. In a survey conducted by Tominaga et al.¹⁶ on traumatic stress and post-traumatic growth among school counselors dispatched between two and four months after the Great East Japan Earthquake, they reported that "the re-experiencing reactions immediately after providing support had almost completely subsided after two to three months, a significant positive correlation was found between re-experiencing reactions and post-traumatic growth, and school counselors with little advance preparation and knowledge were at higher risk of burnout." They also noted the need for prior knowledge of how to deal with trauma, and that facing re-experiencing reactions little by little, rather than strongly avoiding them, will contribute to recovery and growth¹⁷.

4.3 Teachers' Awareness of Integrating Disaster Risk Reduction Education with Traumatic Stress Care

We asked participants whether they agreed or disagreed with disaster risk reduction education activities within one year of the disaster. As a result, about 92% of respondents answered negatively to "showing tsunami footage (D2)," and about 70% answered negatively to "expressing early disaster experience (D3)." Critical incident stress debriefing¹⁸, which was implemented after the Great Hanshin-Awaji Earthquake (1995), was criticized after the September 11, 2001 terrorist attacks, and the PFA⁴ wrote that debriefing "should not be done." The Japanese Psychiatric and Psychological Association has also issued a similar warning against forcing early expression of disaster experience. This result is consistent with the current principles of post-disaster psychological support.

Avoiding the expression of disaster experience or viewing tsunami footage within one year of the disaster is an appropriate response to traumatic reactions, while continuing to avoid safety reminders in the mid- to long-term is a risk for stress disorders.

Tominaga⁶ proposed a three-stage psychological support model according to the time period after a disaster. In the first stage, immediately after the disaster and during the acute phase, the basic approach

is to restore normalcy and provide support for daily life, with an emphasis on dealing with everyday stress, such as sleep and irritability. Lazarus and Folkman's stress-coping theory¹⁹ was used as a reference. In the second stage, when temporary housing is being constructed, emphasis is placed on trauma psychological education and stress management experiences, in which appropriate ways of dealing with re-experiencing reactions are taught. The third stage, which differs depending on the region and individual, is expression and sharing of the disaster experience through talking, writing, and drawing.

In addition to this three-stage psychological support model, the results of this survey support the possibility of implementing disaster prevention education from the first stage, taking into account the level of distress. This is because more than 90% of respondents agreed with D4 "Dealing with aftershocks and relaxation techniques," D5 "Walking around evacuation routes in advance," D6 "Psychological education on re-experiencing reactions during evacuation drills," and D7 "Methods of calming down, such as breathing exercises, before and after evacuation drills."

On the other hand, 10% strongly disagreed with D1 "Evacuation drills without prior notice," while 30% strongly agreed. In this survey, teachers were asked to reflect on the year after the disaster nine years after it occurred. Further research is needed on whether to conduct unannounced drills immediately after an earthquake.

Prolonged exposure therapy⁷, a reliable treatment for PTSD, involves imaginary exposure and real-life exposure. Evacuation drills are real-life exposure, while expressing disaster experiences and watching tsunami footage correspond to imaginary exposure. While tsunami footage is considered a safe stimulus, it can cause overwhelming distress. In exposure tasks, it is considered desirable to challenge stimuli that score less than 70 on the Subjective Unit of Distress (Suds). It is desirable to ask children in advance about the subjective distress level of various disaster risk reduction education activities before carrying them out.

The expression of disaster experiences in the third stage is not only based on Foa et al.'s theory⁷ of trauma habituation, but also on how important it is for children to have meaning from the experience activities. At one elementary school in Iwate Prefecture, six months after the earthquake, sixth graders wrote a song with their homeroom teacher, incorporating their own feelings about the disaster into the lyrics.¹⁴ One student who lost family members spoke about her experience to

sixth graders when she became a high school student. "I thought that by writing a song I could help the local people and sort out my own feelings, so I reflected on the disaster and wrote the lyrics." Expressing and sharing the experience of the disaster contributes meaningfully to the transmission of knowledge about disasters. Therefore, when combining disaster risk reduction education with traumatic stress care, it should be implemented with an emphasis on reducing the psychological and physical burden on children and the meaning of the experience.

4.4 Limitations

This study has some limitations because it is based on teachers' recollections nine years after the disaster.

1. Because responses from the students themselves were not collected, it is not possible to determine the percentage of affected children who developed stress disorders.
2. This study was unable to determine whether "unannounced evacuation drills" increase the risk of stress disorders within one year of a disaster. Future research is needed to provide support to victims immediately after a disaster and to provide immediate feedback to them on the results of the research.
3. This study proposed the possibility of integrating disaster risk reduction education and psychological support in disaster-stricken areas after a disaster, but did not verify their effectiveness.

However, this study revealed that disaster risk reduction education could destabilize the mental state of some students, and showed that incorporating traumatic stress care into disaster risk reduction education could reduce the risk of stress disorders. This study was made possible by nine years of long-term involvement and support.

Conflict of Interest:

The authors declare no conflicts of interest associated with this paper.

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