



## Original Article

# Children's emotional reactions after landslide disaster in Indonesia: a qualitative study

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### Abstract

**Objectives:** This study aims to explore the emotional reactions of children after a landslide disaster.

**Methods:** This is a qualitative, hermeneutic phenomenological study. A total of 11 junior high school students who were victims of landslide disasters were selected by purposive sampling techniques. The data collection tool was created in form of semi-structured interview guidelines and obtained through in-depth interviews related to emotional reactions using recording tools on each participant. The data processing was carried out by listening to the verbal descriptions of participants from the recording device, compiling verbatim transcripts, and analyzing based on specific statements through the coding process, categorization, and grouping to form themes.

**Results:** The participants are junior high school students consisting of female (n=6) and male (n=5) students who suffered losses of house and family members. Totally, five central themes are identified related to the emotional reaction of children after the landslide disaster experienced: "shock," "sad," "fear," "anxiety," and "powerlessness."

**Conclusion:** The results showed that children who survived a landslide but lost their home or family have a negative emotional reaction that disturbs psychological well-being. Therefore, negative emotional reactions of the landslide victims affected the mental health and academic achievement of children in school. Hence, psychosocial nursing care is needed for children who survived landslide to create a comprehensive disaster nursing program and prevent psychological problems. This program starts the process of mental health nursing assessment and collects accurate data from the children who survived a landslide disaster. Based on this result, psychosocial interventions from mental health nurses are needed to help children cope with the negative emotional reaction on post-landslide disasters.

**Keywords:** Children; emotional reactions; landslides; post-disaster.

Catastrophes traumatize people, leading to mental and physical health problems. A survey conducted in the United States discovered that 13% of respondents experienced natural or human-caused disasters. Respondents also showed an increase in psychological distress after natural disasters.<sup>[1]</sup> Meanwhile, disasters have a significant impact on a child's life because it triggers the emergence of behavioral problems, emotions, and functional disorders in home or school environment.<sup>[2]</sup> For instance, landslide can suddenly happen, causing extensive environmental damage and traumatizing children.

Landslide is deadly because it usually happens with great speed and pressure. This has caused an average annual mortality rate of approximately 4000 people worldwide, where about 25–50 victims are from the United States.<sup>[3]</sup> Landslide causes acute and long-term problems for their victims<sup>[4]</sup> due to their on impacts economic, social, and health conditions. Additionally, landslides cause significant mental health impacts for the prevalence of post-traumatic stress disorder (PTSD) compared to other types of disasters.<sup>[5,6]</sup> It also causes psychological damage due to changes in socioeconomic conditions such as dam-

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**What is presently known on this subject?**

- The emotional reactions of children after a landslide can affect their mental health and academic performance in school; therefore, there is a need for psychosocial nursing care after a landslide.

**What does this article add to the existing knowledge?**

- This study shows that there are negative emotional reactions experienced by children after the landslide disaster. These conditions indicate the need for an assessment instrument that can detect emotional reactions in children who survived the disaster and require nursing care by mental health nurses.

**What are the implications for practice?**

- The emotional reactions of children victims after landslides cannot be assessed by a team of volunteers who come to the disaster location. It takes skills to perform therapeutic communication in children to explore their psychological condition. This is because the emotional reactions experienced by children are revealed with the appropriate skills, which helps the mental health of children in the future. The emerging themes can serve to develop assessment instruments to quickly detect children's psychological conditions and ensure psychosocial nursing interventions by mental health nurses in restoring and maintaining children's mental health.

aged homes, job losses, and the loss of family members. The results of landslide victims in Addis Ababa, Ethiopia showed an approximate value of 37.3% of the prevalence of PTSD.<sup>[1]</sup>

Indonesia is among the countries that often experience disastrous landslide along with northern India, northern Pakistan, Nepal, Bhutan, western Bangladesh, Central America, the Caribbean, Colombia, and the Philippines.<sup>[7]</sup> The west Java province and Sukabumi regency have a high potential for landslide. Moreover, landslides are downhill movements of the ground and out-of-slope-forming materials due to gravity and external processes such as rain, earthquakes, and slope disturbances by humans. The materials involved are soil, debris, and rock flows. Sirnaresmi Village, Cisolok District, Sukabumi Regency, and west Java are among the areas in Indonesia that are geographically located in highlands and mountainous areas. The geographical location causes the Cisolok sub-district to have unstable soil conditions.<sup>[8]</sup> The landslide disaster that occurred on December 31, 2018, claimed 31 lives, 64 survivors, affected 107 people, and buried 30 houses.<sup>[9]</sup> This has caused problems in all affected communities but the impact is more concerning on children than on adult.

Natural disasters, such as landslides, make children, women, and the elderly a more vulnerable group than men and adults.<sup>[10]</sup> The experience of trauma due to landslides makes children feel that the world is not a safe place and are more at risk of experiencing mental health problems. Approximately 5%–43% of children affected by disasters have PTSD, while many experience depression, anxiety, and other mental health disorders. The number of children with post-traumatic symptoms or mental health problems varies in different studies based on various factors such as the nature and severity of the disaster, diagnostic criteria, and the meaning of trauma from the survivor. Children whose homes were affected by the disaster have higher psychological symptoms with the same impact felt three years post-disaster.<sup>[11]</sup> Meanwhile, health problems in children who survived disaster include PTSD, acute stress

disorder, depression, panic disorder, phobias, anxiety, and adjustment disorders. Although boys and girls have the same consensus of post-disaster emotional problems, children in prepuberty experience more behavioral and emotional problems.<sup>[2]</sup> Children's emotional reactions to natural disaster experiences require in-depth exploration because the feelings will coexist with thoughts for a long time and affect their behavior.<sup>[12]</sup> Several studies on children's emotional reactions after a disaster discovered that children who were victims of the earthquake in Italy experienced feelings of anger, stress, and anxiety.<sup>[13]</sup> Those who are victims of sandstorms in America experience feelings of anxiety and depression,<sup>[14]</sup> while school-age children after the earthquake in Korea had fear, anger, and sadness<sup>[12]</sup> It was also shown that the experience of disasters causes various emotional disturbances in children.

Children's emotional reactions after a landslide cannot be seen by parents, families, or teachers at school despite the experience can affect their educational process and psychological health. Therefore, qualitative psychological studies of children who survived landslides are carried out using the title children's emotional reactions after landslides.

**The Purpose of the Study**

This study aimed to explore children's emotional reactions to determine mental health education programs for children who survived disasters. The results are expected to elucidate the existing phenomena to become the basis for the preparation of an assessment instrument guideline in disaster mental health nursing in children. Furthermore, the results will provide psychosocial interventions through mental health nurses in the recovery phase.

**Materials and Method****Research Method**

The research question is how is the emotional experience of Indonesian children aged 13–15 years in dealing with landslides. A qualitative study with the hermeneutic or interpretive phenomenological design was used to answer the questions on the emotional reactions of children who experience landslides. Hermeneutic phenomenology is concerned with human lived experience. It focuses on details and aspects within an experience to create meaning and achieve a sense of understanding.<sup>[15]</sup>

**Research Sample**

Participants were selected through the purposive sampling technique, which involved 11 people. The inclusion criteria were (1) junior high school education, (2) having experience as a landslide survivor, (3) experienced loss due to landslides, (4) the family/responsible person approved participants to be involved in the study, and (5) children approved as participants. In-depth interviews will be conducted and recorded using a tape recorder.

### Data Collection

The data collection tool used was semi-structured interview guidelines, which were equipped with observations. Before the interview process, the family or person in-charge of the selected participants explained and signed an informed consent, stating the child's willingness to be a participant. The data were collected through in-depth interviews related to psychological experiences and each participant was interviewed for 45–60 minutes. The permission to use a recording device during the interview was taken from each participant. The in-depth interview was conducted in the school classroom on the 40<sup>th</sup> day after the landslide disaster.

### Validity and Reliability

This study uses principles, such as credibility, transferability, dependability, confirmability, consistency, and verifiability, to ensure the validity and reliability of this qualitative approach.<sup>[16]</sup> The credibility of the data is established when the results can be well recognized by the participants in their social context. Meanwhile, the question was clarified and confirmed to ensure the data credibility. The behaviors and nonverbal messages of the participants were carefully observed during and after the interview to explore the meaning of their experiences. During the analysis process, the results were presented to the research team.

The value of transferability depends on the reader, and the application of the results depends to other social contexts and situations. For the reader assessing the accuracy of the results, a verbatim transcript is presented in the report. To achieve transferability, an attempt was made to provide a detailed and complete description of the process to facilitate the future evaluation of the study. Dependability is carried out through discussions with supervisors on a series of processes, while confirmability conducted by confirming information with participants and consulting with supervisors. In this study, documentation was used to maintain the dependability and confirmability of the responses.

### Data Analysis

The results of the interviews on a tape recorder were immediately transcribed verbatim after the interview process. Subsequently, the data were analyzed through a coding process using data replication techniques arranged in the descriptions of individual phenomena. The analysis process refers to the six steps of Van Manen (2016), which includes (1) turning to interesting phenomena, formulating questions to obtain information related to children's emotional reactions after a landslide, (2) investigating the life experiences through interviews for participants to describe their life experiences and feelings about landslide events, (3) showing the main themes describing the phenomenon-analyzing participants' statements for the initial themes and sub-themes that lead to the formulation of salient essential themes, (4) explaining in the art of

writing and rewriting-revising to elucidate the experiences of children who were victims of landslides, (5) upholds a firm and conscious relationship with previous experience-incorporating observations made and suggestions received, and (6) observing the balance in the study by recognizing the phenomenon from an individual and holistic perspective. These steps were carefully carried out during observation and data presentation.

The Van Manen components that were carried out include turning to the nature of lived experience, involving formulating questions. Meanwhile, before the questions were formulated, the objective of the study was considered by exploring the lived experiences of participants in landslides. The questions included three parts: opening, core, and ended questions, which investigate the experience of the participants. It is concerned with the methods employed to investigate the subject lived experience such as in-depth interviews for data collection. In this study, the interview was conducted with a general conversation about their views on landslide disasters. The core questions asked were on the landslide event and its situation, including "How did it happen at that time?," "What were you doing before that incident?," "What did you do when it happened?," "What is the condition of your family, neighbors, home, and the surrounding environment?," "After the incident, what did you feel, think, and do?," and "How do you feel and your current condition?" This was followed by a concluding question, "How do you go about your school and your life?"

Reflecting on the key themes that define the phenomenon, the emphasis was identified from the interviews by capturing the essential meaning of the subject lived experience. In this study, a line-by-line approach was used to identify the thematic statements made in the interviews.

The phenomenon was defined in writing and rewriting arts to make the participants' feelings, thoughts, and attitudes visible. After hearing each answer several times from the recorder and proceeding with its verbatim transcription, a general understanding of the interviews was recorded in a few paragraphs, re-read the interview text line-by-line, and separated the phrases and sentences relevant to experiences, which were then transformed into the initial thematic statements.

Moreover, the strong and focused relations with the phenomenon were maintained to focus on the question, and incorporated the prior observations to establish a strong relationship with a certain question and phenomenon. The initial themes gradually emerged and the focus of all subsequent interviews was compared to these themes and combined with similar ones.

In this study, the context was balanced by considering the parts and the whole of the overall design of the study, which was constantly weighed against the importance of the parts in the overall textual structure. Throughout the interviewing process, the researcher was engaged in hermeneutic and examined every single theme that emerged. However, the essential ones were separated using free variation in imagina-

tion and compared the themes to other phenomenological texts. The records taken during the analysis stage were used after the interviews to provide examples of helpful participant statements.

### Ethical Issues

This study has been approved by the ethics committee of the Faculty of Nursing Universitas Indonesia with the number Ket-179/UN2.F12.D1.2.1/PPM 2021. The Indonesian ethic committee health research codes were also used to adhere to ethical standards. All participants and the person in-charge of the participant about the study's objectives and significance were informed. Written permission was obtained from the person in-charge and it was conducted in school. The person in-charge of the prospective participants was also informed about the previous study and signed the informed consent form. Participants submitted their informed consent to participate and consented that their statements can be recorded during the interviews. The principle of information confidentiality was followed at every stage. The identification of interviewees was not mentioned; all documents about the participants were kept in a safe separate folder. The participants had the option to quit at any time. Participants were always treated with respect and were reassured that their comments are kept confidential.

## Results

A total of 11 children who were victims of landslides, female (n=6) and male (n=5) participated in this study. The age of the participants was between 13 and 15 years old and attends class 7–9 in junior high school, which is located in the landslide disaster area. During the landslide, the children were studying the Alquran in the Mushallah and some were watching television with their families at home. All victims had experiences of loss in form of a buried house, loss of a father, loss of a friend, and the loss of a place used to play with friends due to landslide.

Based on in-depth interviews, emotional reactions experienced by children who were victims of landslides in five main themes were obtained as follows:

### 1. Shock

All participants revealed that there had been a landslide in their area, and the participants were shocked that it had happened when it was first discovered.

*"I was in shock after hearing the rumbling sound and I saw that the houses downstairs had been covered with soil and I heard a voice shouting for help. I was confused, at that time I was upstairs in the Mushallah" (P1).*

*"I felt like I was shocked at that time, suddenly the house moved, my mother pulled my hand out through the door and ran upstairs. I was confused why I was asked to run, it was*

*only when I got upstairs that I saw my house was lost to a landslide" (P6).*

*"What do I feel, I'm shocked by this incident. I never thought there was a landslide in my area, I thought this place was safe and there would be no disaster" (P9).*

### 2. Sad

All participants expressed feelings of sadness because of the unexpected incident in their lives. It was observed that when conducting in-depth interviews, the participants' expressions still looked sad and even cried despite the landslide happened 40 days earlier.

*"It has been really sad until now. I don't have a father and the house is also damaged, so I live at my mother's relative house and don't know when I can go to my own home again. I still cry when I'm alone" (P2).*

*"I just want to cry by nature. I don't have parents anymore; all I have left is my sister. Now I live with my relative brother for a while. Later I will be taken by my grandfather and I will not live here anymore" (P4).*

*"When I'm alone, I keep crying, my playmates aren't around because they became victims. Only my house was damaged, so sad why it is like this. I feel like I don't have friends to play with anymore" (P10).*

### 3. Fear

Participants expressed their fear of landslides happening again.

*"I thought that the area where I lived was safe, all this time I only knew about the disaster from the news. My place doesn't have a volcano; the sea is also far away. It suddenly turned out like this, now I'm scared, what if it rains, it keeps falling again" (P3).*

*"I'm still afraid, if it suddenly slides again because it happened fast. I'm afraid when I sleep I don't have time to run" (P5).*

*"There are mixed feelings, afraid and sad. I was reciting the Alquran with my friends at the time of the incident. The voice was loud and fast so many houses and people were covered in soil because the coverage is high. So, I'm afraid to help" (P11).*

### 4. Anxiety

Participants felt worried because of the experience of being a victim and always think about landslides and feel restless.

*"I'm worried, I'm scared, I don't know what to do, just hearing the sound of a car coming makes me worried like there's going to be another landslide. So, I like to wake up when I sleep. I'm worried when it rains. I'm afraid of another landslide" (P7).*

*"I've tried praying, but still remembering my feelings are still scared, worried, confused why I can experience this and why*

*all of this happened. I want to live in a safe place. I just want to move" (P 8).*

*"What I'm worried about is my mother and my father will no longer be around who will look for money to build a house because now my mother and I still live at our family's place" (P 6).*

*"I'm worried because I still like to dream of being chased by landslides. I'm afraid there will be more and I'm confused about where else to run" (P 10).*

## 5. Powerlessness

Participants thought that they are no longer enthusiastic about going to school because all items cannot be saved.

*"I didn't want to go to school anymore, all my books, bags, and school uniform were gone. I'm just wearing clothes now because some help came with lots of clothes" (P1).*

*"I feel like I don't have any friends anymore because my friends go to school and my playmates at home... so I stay at home a lot..." (P 10).*

*"When I'm alone, daydreaming, I can't study, I'm just lazy to study, anyway, it's not like before the landslide I was excited to learn and go to school" (P 9).*

Environmental disaster, such as landslide, can give a deep trauma to children's psyche, affecting adaptive function, because it was a shocking experience. The emotional reactions experienced by participants require prompt and appropriate psychiatric nursing interventions. This is because adolescents in ages 13–15 years are still psychologically developing; therefore, experiencing a landslide disaster will have an impact on their psychological development in the future.

## Discussion

### 1. Shock

The responses of children who survived a landslide were shocking. The children expressed surprise, shock, and disbelief at the changes in the environment that occurred, in which family and friends suddenly disappeared. This situation agrees with the results which state that shock can occur due to threats, including those experienced within or less than one hour, and can cause mental health problems.<sup>[17]</sup>

Landslides have a devastating impact because children who are victims can suffer damage or loss of life and disruption to school activities. Meanwhile, it provides a traumatic experience and causes various emotional reactions in children. Participants showed that they were still shocked by the disaster they experienced and never thought that a landslide would hit their environment. This agrees with the study which stated that experiencing natural disaster had an impact on the mental health condition of children. The results of previous studies also stated that about 5%–43% of children who survived natural disasters experienced PTSD, depression, anxiety, and found other mental health effects.<sup>[18]</sup>

In addition to dealing with changing environmental situations, the loss experienced by children can cause shock. This agrees with previous results, where the child's psychology is still in the developmental stage, which can give a negative effect on children's growth and development. Sometimes, although a disaster has occurred for a long time ago, children can clearly remember the event they experienced.<sup>[12]</sup> Therefore, the shock experienced by the participants was a form of emotional reaction that occurred due to an unprecedented landslide.

### 2. Sad

The second theme obtained from the reaction of children who survived the landslide disaster was sadness. Participants expressed sadness because landslides buried their houses, school bags, books, school uniforms, families, and friends under the ground. It was discovered that participants express feelings of sadness due to the loss of parents, family, and friends. Sadness arises due to the loss experienced by participants after a landslide.

Sad feelings can be considered as a transient mood state, which is one of the six basic emotions. It is regulated by the anterior cingulate cortex and the dorsomedial prefrontal cortex,<sup>[19]</sup> which is among the basic negative emotions. Sadness is also one of the emotional languages when experiencing an unhappy situation.<sup>[20]</sup> Although sadness is a temporary mood condition, it can also be a symptom of depression and the most common psychosocial symptom. Previous studies stated that sadness is a response to the pain experienced by the individual's psychology.<sup>[21]</sup> The loss experienced by participants causes psychological pain to participants, which makes the participants feel sad.

### 3. Fear

It was discovered that the reaction experienced by the participants was fear, which is expressed when another landslide suddenly occurred. Participants also stated that when they heard the sound of a car coming, it was like the sound of a landslide they had experienced. This agrees with the results which showed that fear is a conscious emotion that arises due to a perceived threat.<sup>[22]</sup> The impact of landslides on the environment, residence, family, and community is a threat to participants. Physiologically, the landslide experienced by participants is captured as sensory information by the brain, which will affect the part of the participant's brain, namely the amygdala and is translated as fear. This agrees with the results, which showed the basolateral amygdala as the main entry point for sensory information to the amygdala, wherein the plasticity of its primary neuron conditions the fear response.<sup>[23]</sup> Previous results also explained that fear can arise in post-disaster conditions because there are changes that suddenly occurred.<sup>[24]</sup> The landslide disaster made the participants experience the fear of the same incident happening again. The landslide that occurred became a threat to the participants' lives. Therefore, when they heard a loud sound, such as the sound of a car ap-

proaching, the participants were afraid because they thought it was a landslide.

#### 4. Anxiety

Participants respond to landslides through anxiety and expressed anxiety about school, family, and future. This is by the age of the respondents who are teenagers, which will respond to threats with a more sensitive, worried reaction. All participants stated that the emergency due to landslides was their first experience and was a threat. This agrees with the results which stated that an individual's defensive behavior is a direct response triggered by a threat, and it feels more anxiety inducing when it is unknown.<sup>[22]</sup> Additionally, natural disasters increase anxiety in people who had the experience.<sup>[25]</sup> Anxiety experienced by participants is a response to threats related to the future and life of participants.

#### 5. Powerlessness

The results showed that some participants were discouraged about continuing school. Powerlessness is an emotional reaction that affects the child's learning process. Participants stated that their powerlessness to school was because books and school equipment were buried, and uniforms and close friends were lost due to landslides. This agrees with the results which revealed that emotional reactions can affect cognitive processes such as learning and memory.<sup>[26]</sup> This showed that psychosocial assistance interventions by mental health nurses in the recovery phase for children who are victims of landslides are crucial because the psychological impact experienced by children due to landslides can reduce children's academic achievement.

#### 6. Teenager Participants

Adolescence is a period of brain maturation, consequently, stressful situations were shown to have a dominant negative impact on hippocampal neurogenesis which can affect behavior.<sup>[27]</sup> The 11 participants aged 13–15 years are included in the adolescent period. A landslide is a stressor for participants. Based on the brain maturation process and neural plasticity, the landslide event is a traumatic experience that can last in the brain, stored, and remembered. Therefore, psychiatric nursing assessment instruments for children who survived the disaster need to multiply data to provide appropriate interventions. Additionally, they can be given a psychosocial intervention early by mental nurses in the post-disaster phase to prevent chronic mental health problems.

#### Limitations

The strength of this research is the exploration of the experiences of emotional reactions of children aged 13–15 years who are survivors of landslide disasters. These results become the primary data for disaster mental nursing practice development.

This study has limitation considering the exploration is carried out on children who were survivors of landslide disasters; consequently, their emotional responses possibly obtain influence from parents.

#### Conclusion

The experiences of children's emotional reactions to landslides are divided into five themes: shock, sadness, fear, anxiety, and lack of enthusiasm. The emotional reactions felt from landslide disaster experienced by the participants will affect their long-term psychological condition. Recommendations for disaster mental nursing practice: nurses must understand adolescent survivors' emotional reactions after a landslide disaster. Generally, disaster mental nurses must understand the trauma experienced by disaster survivors and its impact on psychological well-being. Therefore, a comprehensive disaster nursing program is needed to prevent the occurrence of psychological problems. The program started with the mental nursing assessment process and accurately collecting data from children who have survived landslides. This is for psychosocial interventions to be given by mental health nurses and prevent chronic mental health problems. Further research in exploring the factors that influence adolescents' emotional reactions by adding the survivor's intrapersonal, family, and socio-cultural variables is recommended.

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