

Parental preparation and management to cope with earthquake disaster

Gambaran persiapan dan manajemen orang tua dalam menghadapi bencana gempa bumi

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ABSTRACT

Elementary school-age children who live in earthquake-prone areas must have disaster preparedness skills. However, they have limited understanding on disaster risks and are unengaged to protect themselves from harm. Parents have a significant role to prepare their children to overcome this situation. Descriptive quantitative method used in this study to describe disaster preparation and management of parents with school-age children. Three hundred and four parents participated in this study (81 fathers and 223 mothers) and completed the research questionnaire of parental disaster preparedness and management by Kawasaki et al (2019). The data was collected from eleven districts in Padang using cluster random sampling technique. The results showed that parents' disaster preparations are more focused on ensuring the safety of children (68.1%). Moreover, parents perceive that school facilities and infrastructure to deal with earthquakes are inadequate (47.7%). In terms of earthquake disaster management, parents are more concerned about ensuring their children's physical health (97%) than mental health (79.6%). Meanwhile, most parents still have difficulty planning post-disaster management related to providing learning facilities (53.6%) and ensuring the continuity of the learning process (48%).

ABSTRACT

Anak usia sekolah dasar yang tinggal di daerah rawan bencana gempa bumi harus memiliki kemampuan kesiapsiagaan menghadapi bencana. Akan tetapi, pengetahuan mereka masih terbatas untuk menilai resiko bencana dan kurang mampu untuk bisa menyelamatkan diri terutama saat sedang tidak bersama orang tua, seperti di sekolah. Oleh karena itu, orang tua perlu sedini mungkin mempersiapkan anak agar dapat mengurangi resiko bencana pada diri mereka. Tujuan dari penelitian ini adalah untuk melihat gambaran persiapan dan manajemen bencana orang tua yang memiliki anak usia sekolah dasar. Penelitian ini menggunakan metode kuantitatif deskriptif. Sebanyak 304 orang tua berpartisipasi dalam penelitian ini (81 ayah dan 223 ibu) mengisi kuesioner yang dikembangkan oleh Kawasaki dkk (2019) mengenai persiapan orang tua dalam menghadapi bencana. Teknik cluster sampling dilakukan untuk mengambil sampel dari 11 kecamatan yang ada di Kota Padang. Persiapan orang tua dalam menghadapi bencana lebih kepada upaya memastikan agar anak bisa menyelamatkan diri (68,1%). Meskipun, persepsi orang tua terhadap sarana dan prasarana sekolah untuk menghadapi gempa bumi dianggap kurang memadai (47,7%). Manajemen bencana yang paling diperhatikan orang tua ketika terjadi bencana gempa bumi yaitu memastikan kesehatan fisik anak (97%) dibandingkan kesehatan mental (79,6%). Saat berada di tempat pengungsian atau masa evakuasi sebagian orang tua merasa kesulitan untuk menyediakan sarana pendidikan dan pembelajaran (53,6%) dan memastikan keberlangsungan proses belajar (48%).

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1. INTRODUCTION

Indonesia ranks among the 35 most disaster-prone countries globally, facing both natural and non-natural hazards. It even holds the top spot as the most disaster-vulnerable country for hydrometeorological and geological disasters (Intan, 2021). Among the geological disasters, in addition to frequent volcanic eruptions, earthquakes occur quite often. According to data from BNPB (2021), 57 earthquakes occurred throughout 2021 alone. Additionally, between January 1st and August 1st, 2022, Indonesia experienced 14 earthquakes (BNPB, 2022). The risk of earthquakes is present in various regions, including the city of Padang.

Padang and its surrounding areas have a history of significant seismic activity, including a 7.2 magnitude earthquake on September 30, 2009. Furthermore, there are ongoing predictions of a potential large earthquake threat in Padang due to the Mentawai Megathrust fault, which poses a high-risk natural disaster. This could trigger a tsunami, resulting in considerable loss of life, property damage, and infrastructure destruction (Zulfikar, 2020).

The risks associated with earthquakes include potential loss of life, property damage, environmental degradation, and the limited capacity of local governments at the district/city level to respond (BNPB, 2019). Research also highlights the psychological and mental health impacts that can vary in severity as a consequence of disaster events (Fergusson & Boden, 2014; Makwana, 2019). Therefore, efforts are needed to mitigate disaster risks.

Disaster risk reduction (DRR) is a strategy that can be developed for communities living in high-risk environments. DRR is defined as a systematic approach to analyzing and managing the factors that cause disasters, such as reducing exposure to hazards, decreasing community and structural vulnerability, managing land and the environment wisely, and enhancing community preparedness for hazardous events (UNISDR, 2009). Preparedness is crucial to minimizing potential risks (Titko & Ristvej, 2020). The belief in the importance of preparedness and disaster-ready behavior should be ingrained in all societal groups, especially at the most basic level, such as households or families. Several studies in various countries have found that families, as the smallest unit of society, play a crucial role in disaster preparedness (Mahdaviazad & Abdollahifard, 2011; Onuma et al., 2016; Thomas et al., 2015; Chen et al., 2019).

Families, especially those with elementary school-aged children, face additional challenges in avoiding disaster risks. The role of parents becomes crucial, not only in saving themselves but also in protecting their children, who are particularly vulnerable during disasters like earthquakes (Hashikawa et al., 2018; Hoven et al., 2009; Peek et al., 2017). Children at this age have limited knowledge and reduced ability to save themselves. Therefore, they heavily rely on their parents to provide appropriate guidance and cues in assessing emergency situations. Parental support, affection, and protection become extremely important, especially in the context of disasters (Pfefferbaum & North, 2008).

Earthquakes, as one of the natural disasters, cannot be precisely predicted, so it is possible that children are not with their parents when an earthquake occurs, for example, when they are at school (Kompas, 2010). Hence, it is crucial for parents to prepare themselves and their children and manage situations when an earthquake occurs (Stikova, 2016). Disaster preparedness includes the knowledge, capabilities, and actions taken by the government, organizations, communities, groups, and individuals to effectively prevent, respond to, and recover from hazardous events or conditions (UNISDR, 2009). Disaster management, on the other hand, has a broader scope, focusing on reducing the hazards that can threaten lives and damage property and the environment (Coppola, 2015).

Disaster management plays an important role both before and after a disaster occurs. Before an earthquake, parents need knowledge to prepare their children for what to do if an earthquake occurs while they are at school, how to get home or to a meeting point, and ensuring the child's safety until they reach home. Post-earthquake disaster management includes taking care of and maintaining the child and their environment while in evacuation shelters (Kawasaki et al., 2020).

Several previous studies have indicated a low level of preparedness and disaster management among parents (Putri, 2020; Hildayanto, 2020). Furthermore, this research focuses more on the preparation and management of earthquakes by parents when children are at school. This is because elementary school-aged children spend a significant amount of time at school. This study aims to examine the preparedness and disaster management practices of parents who have elementary school-aged children.

2. METHODS

The research method used is descriptive quantitative. The population for this study is parents with elementary school-aged children. The sampling technique used in this study is cluster sampling. Sampling was conducted in 11 districts within Padang City. The number of participants in this study is 304 parents (81 fathers and 223 mothers) with children aged 6-12 years. The instrument used in this study is a questionnaire with two answer choices (yes or no) followed by open-ended questions. This research instrument was developed by Kawasaki et al. (2019). The research instrument consists of two subscales: disaster preparedness and disaster management performed by parents. The data obtained were analyzed using

The procedures in this research began with studying the phenomenon of earthquakes, specifically within a family setting. The next step involved studying measurement tools suitable for this phenomenon. Initially, data collection was conducted by distributing Google Forms, but due to suboptimal results, the process was continued by distributing the research instrument to elementary schools to request assistance in forwarding the research scales to parents or directly meeting with parents.

3. RESULTS AND DISCUSSION

Results

Based on the research results, a general description of the research participants was obtained based on their experiences during the earthquake, as follows:

Table 1. Earthquake Experiences

Participants' Experiences	Have experienced	Never experienced
Experienced an earthquake \geq 6 SR	60, 8%	39,1 %
Children were at school when the earthquake occurred	93,75 %	6,25 %

From table 1 above, it can be seen that more than half of the participants in this study have experienced a fairly strong earthquake that is destructive, namely with a magnitude of 6 SR. In addition, almost all participants have experienced an earthquake when their children were at school.

Table 2. Earthquakes Potential in Residential Area

Earthquakes Potential in Residential Area	Percentages
High probability	14,47 %
Moderate probability	59,21 %
Small probability	26,32%
Total	100%

Based on Table 2 above, more than half of the research participants think that the potential for an earthquake in their home area has a moderate possibility.

Furthermore, the instrument in this study is a question asked to participants that has two sub-aspects, namely disaster preparation and disaster management. Disaster preparation is about how parents have prepared their children if a disaster occurs, especially an earthquake when they are at school. The next sub-aspect is about disaster management. This is more about how parents focus on two things, namely how to raise their children and the child's environment after a disaster.

Table 3. Preparing for Disasters

Questions	Yes	No
Do you know how to ensure your child's safety while at school?	68,1%	31,9%
Do you know how to pick up your child from school during an earthquake?	64,1%	35,9%
Have you determined a place or location to meet your child if you are unable to go home during an earthquake?	56,9%	43,1%
Have you discussed with your child what he or she should do while waiting to meet you during an earthquake?	62,5%	37,5%
Do you think the school has good facilities or services to deal with disasters?	47,7%	52,3%

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Based on table 3, it can be described that parents of elementary school children have made preparations to face an earthquake disaster while the child is at school. The results of open questions show three main themes, namely (1) providing socialization to children about self-rescue efforts, (2) establishing communication with the school, especially the homeroom teacher, (3) picking up children immediately after the earthquake. However, there are still quite a lot of parents who have not made preparations such as the absence of an agreement for a meeting point when an earthquake occurs, there is no direction regarding what children should do while waiting for their parents. The lack of preparation is also supported by parents' perceptions of the low level of good school facilities to face an earthquake disaster.

Table 4. Disaster Management (Children Protection)

Efforts on protecting children	Yes	No
Directing children regarding the evacuation process or how to save themselves while at school	93,4%	6,6%
Ensuring children are safe while at school	91,8%	8,2%
Ensuring that children can return home safely	91,8%	8,2%
Providing post-earthquake mental health services	79,6%	20,4%
Ensuring children's health such as regulating diet and exercise	97%	3%

In general, table 4 shows that most parents have made efforts to protect their children in the event of an earthquake, especially in terms of their children's safety and physical health. However, there are still many parents who have not made efforts to protect their children's mental health after a disaster.

Table 5. Disaster Management (Educational Stability)

Efforts related to educational sustainability	Yes	No
Related efforts Can provide education or learning facilities for children during evacuation or in refugee camps	53,6%	46,4%
Ensure that learning activities such as at school continue while children are displaced	48%	52%

Table 5 explains that in the sub-aspect of disaster management regarding efforts related to the continuity of children's education while in evacuation. Most parents still have difficulty planning the continuity of education and the availability of learning facilities during evacuation or while in evacuation after an earthquake disaster..

DISCUSSION

The objective of this study is to examine the preparedness and management of parents with elementary school-aged children in the event of an earthquake. The findings indicate

that most parents have prepared for their children's safety during an earthquake if the child is at school. This preparation includes educating children on how to save themselves, communicating with teachers and school staff, and picking up their children promptly after an earthquake. However, despite these efforts, nearly half of the parents have not prepared a meeting point in case the child cannot return home immediately, nor have they provided guidance on what children should do while waiting for their parents.

In terms of disaster management, parents focus on ensuring their child's safety at school, how to evacuate children from school, and ensuring the child can safely return home. This focus is due to the fact that children are not with their parents during school hours if an earthquake occurs. Children learn from their parents how to assess whether a situation is dangerous or safe, making parental education on self-saving measures crucial. Support, affection, and protection from parents are particularly important in the context of disasters (Pfefferbaum & North, 2008). When parents are not with their children, the risk of children being exposed to dangers from an earthquake increases because parents cannot directly protect them. Additionally, parents perceive that school facilities are inadequate for handling disasters or earthquakes, leading them to feel that their preparations to ensure their child's safety during an earthquake are insufficient. Furthermore, many parents have not discussed a meeting point in the event of an earthquake while separated, although this is an essential preparation for ensuring children's safety at school (Kubicek et al., 2008).

The role of schools and teachers is crucial during disasters like earthquakes to rescue students and communicate with parents about their child's situation. Although teachers play a significant role in disaster management and risk reduction, many are still unprepared to assist children during an earthquake (Salita et al., 2020). Parents' perceptions regarding the inadequacy of school facilities for earthquakes align with previous research findings. Nugroho (2019) found that primary school facilities for handling earthquakes are still considered inadequate. As a place where children gather, schools need to prepare all aspects to reduce the risk of disaster impact on children (Oçal & Topkaya, 2011; Faustino et al., 2019). For example, the Pasaman earthquake in 2022 occurred on a Friday at 08:39 during school hours, causing panic and damaging 12 primary schools in the area (Zikri, 2022).

Additionally, this study found that parents' efforts focus on their children's physical safety and health during an earthquake. Parents also work to ensure adequate nutrition and physical activity for their children during evacuation or while in shelters. Disasters are closely related to environments that can negatively impact children's physical health (Datar et al., 2011; Thamarapani, 2010). This concern leads parents to focus on preventing illnesses and ensuring proper nutrition and physical activity for their children (Bustelo, Kuenning, & Lucchetti, 2012).

On the other hand, parents' efforts to address their children's mental health are not as robust as their efforts in ensuring physical health. This contrasts with findings from disaster-prone areas like Japan, where parents have begun to focus on their children's mental

health post-disaster (Kawasaki, 2020). Children are considered vulnerable to psychological disturbances, which can even develop into Post-Traumatic Stress Disorder (PTSD) or other related symptoms (Peek, 2008). Therefore, parents are needed from the preparation stage through to providing support for their children after a disaster. Parents can help reduce unpleasant secondary exposure, assist in recovering from traumatic events, restore children's routines, guide them from negative thoughts or emotions to productive activities, limit media exposure, and facilitate the recovery process. Mental health professionals are needed to help parents identify and address these various tasks (Pfefferbaum & North, 2008). This difference might be due to the availability of mental health services in the region. In Indonesia, parents have limited access to and information about mental health services (Idaiani & Riyadi, 2018), leading to a lack of awareness about the importance of mental health.

In addition to the lack of attention to children's mental health, parents also do not focus enough on ensuring the continuity of education during evacuation. In Indonesia, after an earthquake, school buildings are often damaged, disrupting children's learning activities. Various school damages from previous earthquakes include the 2009 Padang earthquake, which damaged 1,078 schools and required years to rebuild (Puji B, 2010), the 2018 Lombok earthquake, which damaged 606 schools (Aini, 2018), 2,736 schools damaged in Central Sulawesi during the 2018 earthquake (Adiyudha & Yolanda, 2018), and the Mamuju earthquake at the beginning of 2021, which damaged 59 schools (Arshandi & Suryatmojo, 2021). This results in a temporary halt in teaching and learning activities until emergency schools are established in evacuation centers or near the old school buildings. This situation leaves parents to cope with the existing conditions or policies.

4. CONCLUSION

Based on the research findings, it is evident that most parents of elementary school-aged children have taken steps to prepare for earthquakes. The main preparations include ensuring the child's safety while at school by educating them on self-rescue, establishing communication with teachers, and ensuring prompt pickup from school after an earthquake. However, parents face challenges due to the perceived inadequacy of facilities and resources. The research also reveals that parents focus more on ensuring physical safety and health rather than mental health in disaster management.

Based on these findings, the author recommends that parents of elementary school children living in disaster-prone areas should establish cooperation with teachers regarding what can be done to ensure the child's safety if an earthquake occurs while the child is at school. This cooperation should begin before a disaster by building communication or making agreements on the steps both parties can take to ensure the child's safety. Parents should also discuss and agree on meeting points with their children for situations where an earthquake might occur while they are not together. Additionally, parents need to pay attention to their children's mental health as well as their physical health. This is because disasters can lead

to psychological disturbances or a decline in mental health if not addressed promptly and appropriately. For future research, it is recommended to use more in-depth data analysis methods, both quantitative and qualitative, to explore phenomena or results obtained in the study.

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