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Disaster Preparedness From House For Earthquake-Prone Area In Sukabumi Area, West Java

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ABSTRACT

Indonesian territory is located in a region that is prone to earthquake disasters. Therefore, there is a need to educate the community about emergency scenarios related to earthquake disasters since they can happen at any time. One of the preventive measures that can be taken is how the community can arrange the interior of the house so that the house is safer and prevent the furniture from endangering the occupants of the house in the event of a disaster, especially an earthquake. This community service's goal is to foster community interaction through the creation of a furniture arrangement workshop inside the home to decrease risk. The strategy is implemented through a session on home organization. The strategy used takes the form of a workshop on how to set up homes safely. From the results of the workshop, it is envisaged that the community would be better able to comprehend how to arrange furniture in the home to prevent accidents. Workshops are provided in the form of pictures and tutorials along with examples of before and after arrangements to help the community better understand the layout of furniture that is under safety.

Keywords: *earthquake, interior design, safety house, community development*

A. INTRODUCTION

Indonesia has many areas that are susceptible to natural calamities, including earthquakes. According to data provided by the Meteorology, Climatology and Geophysics Agency (BMKG), the Sukabumi and Bogor regions are among those that are vulnerable to earthquake disasters (2). The West Java region has a potential risk of earthquakes due to the presence of three faults: the Sesar Lembang, Cimandiri Baribis Fault, and Garsela Fault. On January 23, 2018, a 6.1-magnitude earthquake with its epicentre in the Indian Ocean or Southwest Java occurred, and on June 23, 2018, a 3.6-magnitude earthquake with its epicentre in the southwest

of Bogor Regency (2). The public must tread cautiously and awareness in light of this situation by foreseeing the potential for fatalities.

The Regional Disaster Management Agency has established earthquake evacuation routes and gathering points in the event of a disaster as a form of reducing disaster risk. Implementing safety inside buildings or homes as part of the three stages of minimizing the impact of accidents—pre-disaster, during the disaster, and post-disaster—is one way that the community can prepare for and minimize the impact of disasters. In this workshop, the community's pre-disaster mitigation strategy is discussed, including how to set up the furnishings in a home to ensure that everyone is secure and the disaster's effects are minimized. People can lessen the effects of disasters that occur indoors by being aware of a safe layout (home).

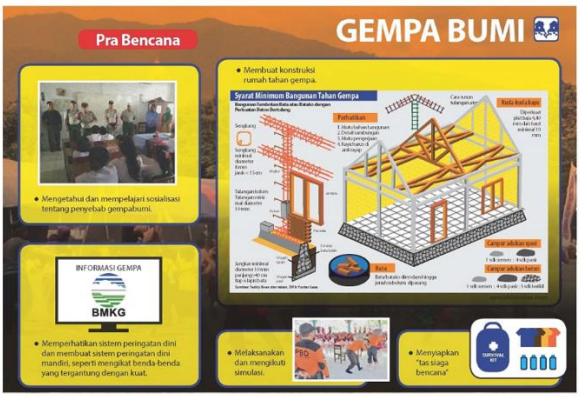

Figure 1. Pre-Disaster Mitigation from The Regional Disaster Management Agency

B. METHOD

The method used in this Community Service is in the form of a workshop on the interior arrangement and home furnishings that can minimize the impact of the earthquake. The training was provided through online and offline media to communities in the territory of Indonesia, especially in earthquake-prone areas such as the village of Gedepangrango, Sukabumi. The training material is in the form of a picture simulation of how to arrange the interior of a safe house and needs to be a concern to avoid the impact of the earthquake.

C. RESULTS AND DISCUSSION

More than 80% of the victims of the earthquake in Hanshin Japan in 1995 were caused by collapsing buildings and nearly 15,000 people suffered minor and serious injuries as a result of falling furniture (6). The data illustrated that loss of life and injury due to the collapse of objects and buildings and damage to furniture causing material and furniture losses can be harmful to life (source of disaster). With the frequent occurrence of disasters in the territory of Indonesia, especially in the Sukabumi area and its surroundings (in the Western part of Java), it is necessary to anticipate the need to minimize the number of victims during a disaster. Disaster mitigation in the high population and high-risk disaster areas is also playing a key role to prevent property loss and fatality. Hence, society's awareness can be encouraged through pre-disaster preparedness. This form of anticipation (disaster mitigation) is included in pre-disaster preparations that need to be carried out before a disaster occurs to reduce risk in the event of a disaster/earthquake.

The following preparations must be made in advance of a disaster: personal preparedness, house preparation, and family preparation. The emphasis of this workshop will be on home planning to lessen the effects of disasters. To make it simpler for the community to understand and implement pre-disaster anticipation in residential dwellings, it will be divided into many sections.

Things that need to be considered in laying out furniture in the house to anticipate earthquake disasters are:

1. One example of early anticipating is the requirement for individuals to construct sturdy, earthquake-safe homes to safeguard residents. Verify the building's structure to make sure it is still stable. For safety reasons, it needs to be fixed if there is a crack or if it appears to be moved. Additionally, the necessity to lock the doors and windows in the home so that access to and from the occupants of the house is unhindered in the case of a disaster needs

to be the primary issue when organizing the arrangement of the furniture. Avoid placing large furniture near doors and windows so that in the event of an earthquake the furniture does not fall and cover the door access. and windows (Figure 2).

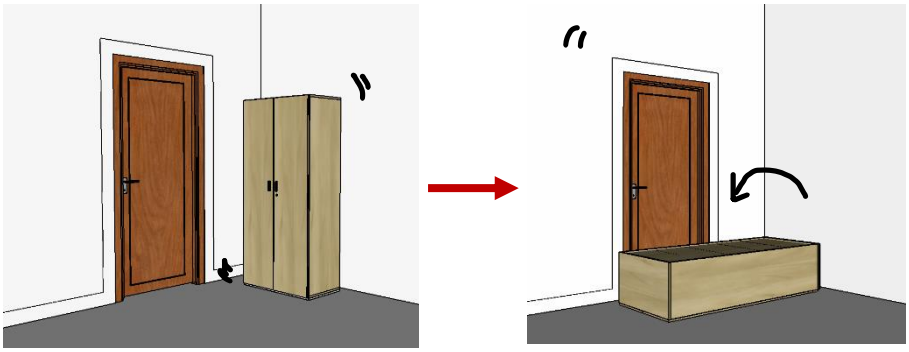

Figure 2. Furniture placement does not cover doors and windows
(Source: Sofiana, et al. 2022)

2. Securing the objects in the closet is another issue that requires consideration. The home has a variety of wardrobe types. It should be noted whether the cupboard has a lid or not (cupboard leaf). If the cabinet has a lid, it is preferable if the cupboard has a lock to keep it closed and prevent easy opening (Figure 3). Fragile objects should be kept in the lower cupboard and should be closed and locked for the protection of the residents so that in the case of an earthquake the contents of the cupboard do not come out. Breakable objects should be kept in low, locked cabinets, and shelves should be firmly fastened to walls. A suggestion for the storage of glassware is required.

Figure 3. Types of a cabinet safety lock
(Source: www.noon.com)

3. Wall-mounted shelves and displays for home decor should be taken into consideration. To prevent harming the family members while they are sleeping, avoid placing a shelf above the bed (Figure 4), and hang heavy items such as pictures, mirrors or away from beds. Ropes or wires can be added to open shelves without doors to add safety and stop objects from falling. When creating a house, it's crucial to pay attention to the furniture's construction and the possibility of falling objects.

Figure 4. Avoid installing wall-mounted shelves above the bed and couch
(Source: www.livingspaces.com and www.houzz.com)

4. Triangle of life was introduced by Gouh Coop. Utilize the furniture around us as part of self-rescue. Building components like columns, door frames, or built-in furniture can also be used in addition to furniture. However, it does not only depend on the theory of triangles but this technique must be supported by the layout and composition of the furniture in the room so that space users can "read" the space. To be safe, it is also important to consider the durability of the furniture being used as a pedestal.

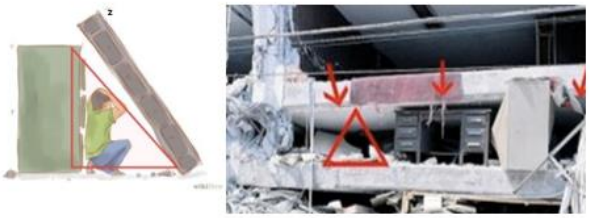

Figure 5. Position of furniture on the Tangle of life
(Source: wikihow.com and www.emergency-live.com)

5. It is important to know how to drop, cover and hold on during an earthquake. These steps can help reduce the likelihood of injury. As soon as the sign of an earthquake, drop onto your hands and knees. Earthquakes are very powerful, remain standing could cause injury. Dropping to the floor and staying low are safer. When all things fall during the earthquake to protect the head must cover the head. If there is a sturdy desk or table it is better to crawl underneath for cover. Building damage, earthquakes, and other threats are still a possibility. Continue to be in your covered, lowered position until the shaking stops. During an earthquake, furniture may move, so if the desk or table you are under moves, you must be ready to move with it. To maintain your proximity to your refuge, you should hold on with one hand. Hold on to your head and neck with both arms and hands if you aren't hiding under any furniture.

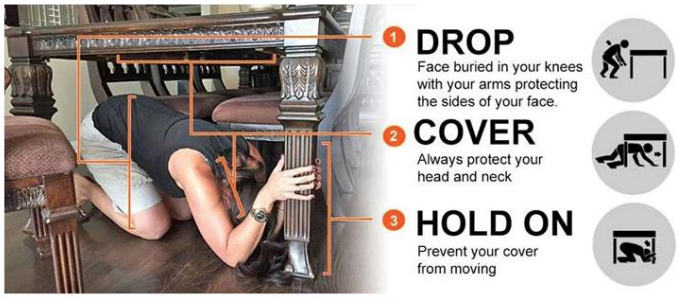

Figure 6. Drop, Cover and Hold on Position during an earthquake
(Source: www.disastersurvivalskills.com/blogs/preparedness/triangle-of-life-vs-drop-cover-and-hold-on)

6. The need to arrange the furniture and interior of the room to minimize the consequences of disasters, including choosing the main room as a gathering place within the home so that during the disaster, family members can easily find access outside the house quickly and safely through the family room as a gathering place during an earthquake (Figure 7).

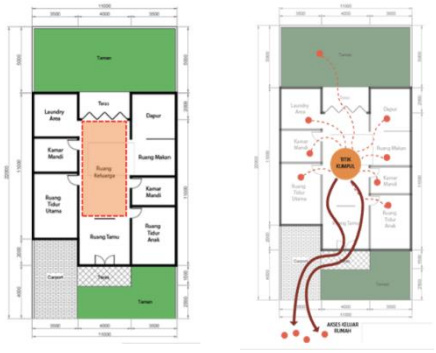

Figure 7. Gathering Point inside the house
(Source: N.R. Dewanti, 2021)

7. According to figures provided by earthquake experts, there were more earthquakes between the hours of 7 p.m. and 6 a.m. the following morning. Comparatively, earthquakes that happened in the daytime are less than at night (7). Due to the disasters that happened during sleeping periods, it is difficult to make early warnings and take measures to deal with the disasters. Therefore, a household should have an emergency light, both fixed and portable (Figure 8). Where the fixed emergency light is usually placed at the exit or entrance door so that family members can easily find an evacuation route because when an incident occurs the electricity in the house will go out due to the effects of the earthquake. While the portable emergency light can be used as an additional light that can be taken anywhere when evacuating, this light can also be brought to a gathering point in an open area.

Figure 8. Fixed and Portable LED emergency light
(Source: Philips, 2022)

CONCLUSION

Indonesia is subject to earthquakes at any time. Planning and practising what to do in the event of an earthquake will help people react appropriately before, during, and after the shaking starts. Disaster mitigation is a series of efforts to reduce disaster risk, both through physical

development as well as awareness and capacity building in dealing with disaster threats. Preparations that need to be made in anticipating a disaster, include personal preparation, house preparation, and family preparation. The workshop in this Community service elaborates on how accidents can be minimized by arranging furniture inside the house. Determining some suitable furniture to minimize the occurrence of accidents is the focus of the training. This study provides a simulation to get an optimal floor plan for a house by determining a gathering point as one of the access exit routes when a catastrophe occurs. The challenges of disaster management faced by the Indonesian nation will continue to occur in the future. Indonesia is a disaster-prone area and this condition will continue to recur amidst population growth. All elements of society need to be empowered and involved in disaster management. To conclude, this socialization has a positive impact to raise the community's comprehension and awareness of disaster management as they live in disaster-prone locations. It lessens the risks and effects of disasters, particularly for the community, such as fatalities, financial losses, and damage to interior furnishing. Further study is required to determine whether these workshops can be applied in other communities and more accurate application on the site (community houses) needs to be done to practice the workshop. And to increase community awareness and preparedness for the earthquake community need to work together with the government and authorities. Further research needs to be done to find out how effective this training is given to the community as part of earthquake disaster preparedness.

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