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Risk Literacy and Awareness of Injury during Flood Season in Urban Communities Indonesia

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ABSTRACT

The risk of injury at home due to flooding is often not a concern for many people. This article discusses the importance of risk literacy among urban communities in Surabaya, Indonesia regarding safety at home during floods. The analysis about home-safety used safety paradox theory by James Reasons. The method used was a Focus Group Discussion which was carried out through facilitators among residential environmental activists to reveal four safety paradoxes: (1) invisible versus visible safety issues. (2) Potential damage due to defenses, barriers, and safeguards from flood adaptation. (3) Opinion about the role and function of community services and public facilities in minimizing the danger of flooding. (4) Optimism and failure experiences are more relied on by society. The results of the Focus Group Discussion were fall injuries and electric shock more important than other risks. Meanwhile, the safety paradox found that the dangers of electric shock and infection were less visible. People preferred to adapt to severe flooding by constructing embankment around the house. Nevertheless, it becomes a cause of fall injury. While public facilities and community services tend to arrive late, people tend to learn from past experiences. The conclusion that is recommended for home safety risk literacy is that it reduces the danger of falls and electric shock compared to other dangers. The recommended activism is safety activism at home through routine communal programs in the villages. The second recommendation is to prioritize risk literacy through the distribution of short videos on social media.

KEYWORDS: Education, Floods, Injuries, Home safety, Risk literacy.

1. INTRODUCTION

During flood season when there are a lot of puddles everywhere, the potential danger of injury in the home environment increases. Fatal injuries that occur include slipping, drowning, and being swept away by currents. Meanwhile, the World Health Organization noted that flood events that occurred between 1998 and 2017 had affected nearly 2 billion people in the world (World Health Organization, 2023). The impacts include death due to injury, slipping, and drowning. Meanwhile, other cases in several countries are the threat of endemic diseases due to flooding such as typhoid, leptospirosis, bacterial infections, and skin disorders, even more extreme are bites from poisonous snakes and reptiles that enter homes (World Health Organization, 2022). This is prone to occur in areas close to wild areas, forests, and large rivers.

The Indonesian National Disaster Management Agency recorded that in 2022 there would be 598 flood incidents with 8 deaths and 10 injuries. In 2023, the number of flood incidents was 267, 7 people died and 2 people were injured. Even though this figure is still relatively small, this cannot be underestimated considering that injury is something that people avoid (Badan Nasional Penanggulangan Bencana, 2023). People who live in areas prone to flooding will have anxiety about the dangers that befall them (Erni Suharini, 2015; Lamba et al., 2017; Prasetyo & Tjahjono, 2021; Putri Sinta et al., 2022). Even though the data shows that the level of anxiety among the people of Surabaya is moderate, this does not make this a trivial matter. The hazard that always lurks as a potential for danger and injury is one of the paradoxes that has not yet emerged (Haer et al., 2020; Hu et al., 2020).

The city of Surabaya is an urban area with a potential vulnerability to flood areas of 61.23% of the total area (Saifudin et al., 2023). The most prominent potential disaster is tidal floods (Refnitasari et al., 2022). Based on data on vulnerability to flood disasters in Surabaya, several things are essential to pay attention to. One of them is the danger of injury due to flooding and other threatening dangers. The danger of physical injury that occurs during floods is not widely reported because this is considered something that is not an emergency. Reported cases of injuries at home were not specified at specific moments during flood events. This is evident from the Ministry of Health report reported in 2018 which is very holistic. Interesting data found by the

Indonesia Social Insurance Administration Organization is a significant increase in work accidents in the city of Tangerang Indonesia (Badan Penyelenggara Jaminan Sosial, 2015; David Saut, 2018). This means that safety in the work environment is also a serious concern that the losses suffered will increase. What is interesting is the opposite position. What are the figures for losses suffered due to injuries that occur at home? This data has not been explored more intensively to map the number of incidents and the number of losses due to accidents at home.

Apart from specific injuries due to flooding, the province of East Java, Indonesia, had an injury rate that could disrupt daily activities from 2007 to 2018 of 9.3% for all ages. This figure is dominated by urban communities at 9.4%. The highest number as a vulnerable group is in the productive age group, namely 7-24 years. Based on occupation, the vulnerable groups are school teenagers and workers, drivers, and domestic workers. From 2007 to 2018, it shows increasing fluctuations, this has the potential for an upward trend in the following years. The data that is even more surprising is that the most common places where injuries occur are in the home environment, namely around 44.7%, followed by roads at 31.4%. Furthermore, workplaces were 9.1%, schools 6.5%, and other places 8.3% (Badan Penelitian dan Pengembangan Kesehatan, 2018). Furthermore, the data shows that the body parts affected injury were major limbs of the body. This data shows the crucial point that home safety literacy is an urgent need.

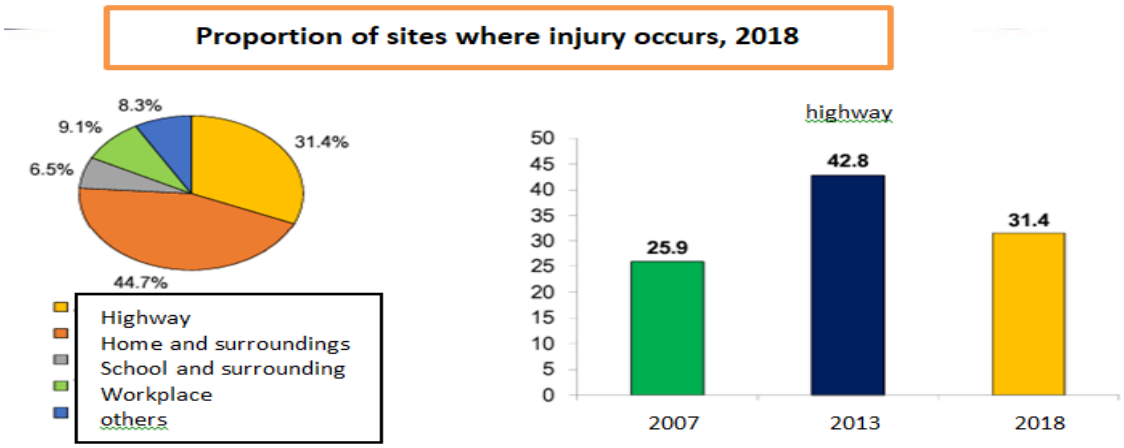

Figure 1. Number of accidents by location in Indonesia
Source: Data From RISKESDAS 2018 Health Research, Indonesian Ministry Of Health

In Indonesia, the concept of home safety has not been articulated in legal regulations explicitly and positively. The documents found are limited to those that regulate public facilities, public safety and transportation, patient and hospital worker safety, and safety regarding environmental hazards. Occupational Safety and Health is regulated in the Law of the Republic of Indonesia No.1/1970 concerning Occupational Safety. Studies state that implementation and literacy regarding Occupational Safety and Health are more focused on construction work areas, industry, hospitals, and offices (Bando et al., 2020; Murtinugraha & Anisah, 2021; Ryani et al., 2020; Susanto et al., 2020; Swastika et al., 2022). Meanwhile, for home safety, safe and comfortable home nursing and praying places are prioritized. (Haq, 2018; Indarwati et al., 2023; Saputra, 2022; Yudhistira, 2022). A study revealed that problems with the physical structure of nursing homes which are intended as places for elderly people to live also experience problems of insecurity. Risk factors for falls in elderly people can also cause "Unwanted Events" and become fatal with worse conditions (Dhanang Puspita; David Nakka Gasong; Harvian Charisma Bangngu, 2018).

The emergence of awareness that home safety is also an important issue during the Work from Home period during the COVID-19 pandemic (Bressan et al., 2021; Gielen et al., 2020; Hidayat et al., 2021). Even if someone stays at home, if someone is careless or doesn't realize the danger, it will result in injury. This is evidenced by the increase in musculoskeletal diseases or injuries, namely bones, joints, and muscles. In some cases, musculoskeletal injuries during the pandemic were caused by unergonomic positions while working, injuries while exercising at home, and other injuries during activities at home in Indonesia (Pristianto, Arif; Andini, Rizqi Mutia; Naufal, 2022). More accidents occur at home when compared to other external environments. Ironically, there are almost no local authorities to provide domestic safety campaigns and literacy themselves.

Literacy and education about the dangers of injury at home (home safety) are still very little implemented in Indonesia. Implementation of Occupational Health and Safety is still focused on work areas, industries, and offices. Even in several countries such as the United States, England, and the Home Safety Act 1961, it is rarely implemented (Palmer et al., 2014). Therefore, this description of safety awareness and paradox is important to maintain this home safety awareness campaign. Even though there are

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major legal controls in dealing with security at home, home accidents remain a threat, especially when a flood disaster occurs (Kendrick et al., 2013). Meanwhile, regulatory documents governing housing are stipulated in Government Regulation of the Republic of Indonesia Number 14 of 2016 concerning the Implementation of Housing and Settlement Areas. Regarding this regulation, studies in Indonesia also show that the implementation of home safety in the arrangement of the home environment is not evenly distributed based on the requirements of the government regulations (Rosita & Dwi Rohmadiani, 2020; Zevalkink et al., 2008).

Empirically and visibly, people, especially those who live in densely populated urban areas or slum zones, will tend to ignore safe and comfortable building construction procedures. This is due to the pressure of weak economic factors to be able to spend extra money to build a comfortable house (Prayojana et al., 2020). Even though the government has prepared flats and very simple houses for the allocation of residents in a zone that is considered to need to be reorganized, the fact is that many economically weak people still live and survive in conditions that can be considered less comfortable and safe (Alfiani, 2016). Even the problem of narrow land size has no effect on comfort and the perception of risk itself.

Economic problems are also often a reason and factor for arranging safe homes in urban areas of Surabaya (L. A. Maharani & Umilia, 2014). You can find that the characteristics of residences in densely populated areas in urban areas that are prone to flooding are identical to slum housing (Katherina, 2018). For example, houses on levels and houses on embankments. Building a small embankment at home is a simple solution to prevent flood flows from entering the house. This is one form of adaptation of peripheral communities to deal with floods. However, this is also not a long-term solution. This also carries a risk factor for tripping, especially for the elderly and children. The risk of tripping, falling, and slipping is an important issue that needs to be considered, even though the danger is very small.

Many potential dangers in the home are overlooked by current Indonesian law. This is related to macro social factors which are more complicated to be implemented by local authorities in regulating domestic environmental safety. One of them is a regulation that emphasizes densely populated housing and settlements that have existed for a long time so that the dynamics of growth, construction changes, and population increase become difficult obstacles (Harahap, 2021). This is one reason for the new standards for assessing domestic conditions. This paper describes the paradoxical perception of the safety of residents of Surabaya, Indonesia during the flood season. In turn, researchers propose further action in environmental activism regarding home safety during floods.

2. PURPOSE/OBJECTIVES

This article emphasizes the home safety aspects that occur during floods. Hazards that lurk when there is a puddle in the house are more important to watch out for. Even though many studies prioritize cases of road injuries and material losses due to floods, researchers assume that literacy about the dangers of injury during floods tends to be considered less important. In contrast to the data obtained by researchers, there are more injuries at home than injuries on the road and in other places. Considering that Surabaya, Indonesia is a coastal city that is prone to flooding when it rains and at high tide, the results of this research can be useful for other coastal areas that are also prone to flooding and the number of residents who are injured during floods.

It is important to realize danger or danger as a paradox through home safety literacy. Home safety is the safety or security of the home which has not been widely campaigned for but is important for community resilience, especially the knowledge of parents and children (Harahap, 2021; F. T. Maharani & Utari, 2021). Home security or safety is something that refers to awareness and education about the risks and potential dangers in and around the home. Potential dangers and threats of risk can cause injury to the body, injuries, and even fatal causes of death. This threat stalks those who live in and around the physical structure of the house. Home safety includes actions to reduce or prevent unwanted dangers through testing, research, and application standards and accepted practices (Kendrick et al., 2013).

3. METHOD

The method used is to collect datasets via the opendata.surabaya.go.id page. This data set is a reference for determining sources based on regional clusters. We consider used the Focus Group Discussion instead to explore the issue of safety paradoxes that occur during household flooding. We simply intended to scrutinize data deeply from the sources.

Surabaya has 63 Community Health Centers spread across 31 sub-districts. From this amount of data, we want to reveal qualitative data how home safety literacy is implemented during floods in urban areas. For this reason, researchers invited many health activists based on the areas most frequently affected by flooding. They were from South Surabaya, North Surabaya, West Surabaya, and East Surabaya. In 2022, floods in Surabaya will cover 5 points starting from the South Surabaya area to the North of Surabaya (Bappedalitbang Surabaya, 2022).

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The selected speakers were represented from West Surabaya, South Surabaya, and North Surabaya, East Surabaya, each represented by 3 people who were active in village activism, totaling 12 people. Researchers also conducted some field observations and in-depth interviews with victims and reviewed documents as well. Data validity techniques are carried out by triangulating source and method methods. The data obtained is qualitative data that interprets the depth of issues and topics that need to be prioritized to become recommendations for communal programs.

The unit of analysis in this research is to dig deeper into the safety paradox problem of flood injuries (Reason, 2000). First, we figured out the depth of opinions and thoughts about safety that are not visible but felt to be there. This question was asked to find out what residents find about the potential danger of injury during flooding. Then how do they respond to lurking dangers with caution and vulnerable groups of individuals? Second, the security adaptation system in the household has the potential to be more dangerous than its benefits. The question regarding this second paradox is to see how security has been built by residents and its benefits. Third, we scrutinized the dynamics and variability of responses to injuries by household residents and changes. This question focuses more on the actions taken by residents to help themselves and their families if there is injury and danger due to flooding. Fourth, we asked about safety beliefs and learning from safety failures. The final question is more interested in knowing how literacy about the dangers of injury due to flooding is obtained by the community. In the future, the results of this question will focus more on how campaigns and education to the community are carried out.

4. BRIEF ANALYSIS

The study of the safety paradox is the study of conflicting risk perceptions between feelings of safety and danger. This perception influences the level of safety, but both are interrelated paradoxes (Reason, 2000). This safety paradox is also between security culture awareness and behavior.

Figure 2 Safety Paradox
Source: (Ramli & Husjain, 2010)

The graphic above clearly explains how the safety paradox works. Two sides are a reflection of an individual's attitude when they are in a situation that requires two attitudes. The first attitude is vigilance and the second is safety. This paradox explains how a person's attitude towards safety can be a paradox between two sides. If someone is in a high awareness status, the chance of an accident will decrease and vice versa. Someone will be in a fluctuating situation similar to the graph above.

When a flood occurs, someone may raise their guard. However, if it is felt that there is no danger during a flood then vigilance will decrease. When you feel safe from the danger of injury, your safety is again threatened (Minton, 2018). Culture is a factor that influences this risk perception paradox. Therefore, when studying how to create an effective risk communication model, culture is a factor that must be considered in increasing participation levels (Dransch et al., 2004; Kendrick et al., 2013; Pidgeon, 1998).

Below is the map of the Surabaya area in Indonesia that illustrating area prone to inundation during floods. This map was published in 2015 by the Surabaya Municipal Government and there is no updated flood inundation map in the 2021-2026 City Development Strategic Plan documentation (Bappedalitbang Surabaya, 2022). The most severe inundation and densely populated settlements were in the northern area due to tidal flooding. Other flood areas are also spread across several areas including the east, south, and west.

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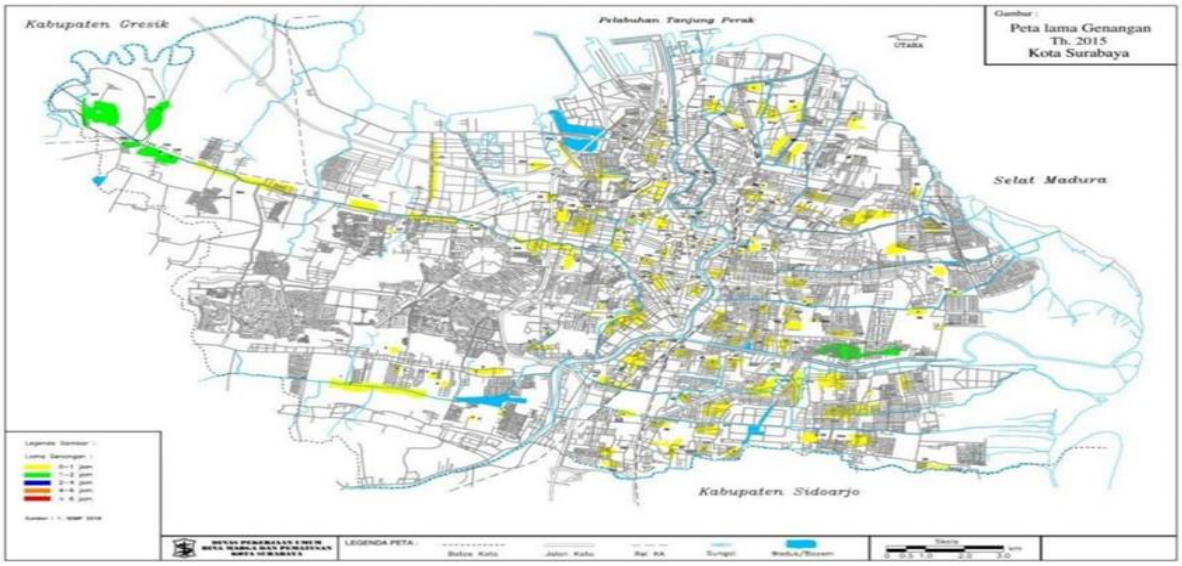

Figure 3 Map of flood-inundated areas in Surabaya, Indonesia
Source: Regional Long-Term Development Plan 2005-2025 (Bappedalitbang Surabaya, 2022)

5. RESULTS AND DISCUSSION

The results of data collection through FGD were generated through a question and answer process and the researcher recorded the opinions of each respondent as well as the respondent's attitude in defending their opinion. The discussion pattern is to ask issue questions to the key persons and they return to provide feedback. Some of the salient things that were obtained were the patterns of issue answers which varied based on region. Therefore, the conclusion of the discussion takes a regional characteristics perspective.

Table1. FGD Summary of Safety Paradox

City zone of Surabaya	Awareness of invisible risk	Adaptation home safety system	Dynamics and variability respond	Assurance behavioral and self-learning.
North Surabaya : Morokrembangan, Kenjeran	Tidal flood is very crucial. Inundation for days	No actions to encounter tidal flood. Securing precious properties. Social problems arise due to livelihood	Alert to submerging tidal flood and early warning system. Well-trained mitigation.	Reluctant of being relocated. Self-learning behavior Center social service for prompt aid
East and Center Surabaya : Gubeng, Rungkut, Tenggilis Mejoyo, Sukolilo dan Tambaksari	Flood in the dense settlement. Inundation for several hours	Water pumping and embankment. Rising floor. Securing electricity hazard potencies	Alert to electricity injury	Demand more authority assistance to drain faster
West Surabaya: Banyu Urip, Benowo	Drainage issue and uneven ground surface.	Embankment and improving sewage.	Alert to physical injury	Self-learning from a bad injury and traffic accident
South Surabaya: Gunungsari, Wonokromo,Wonocolo	Flood inundation at housing area.	Embankment, improving sewage and rising floor. Securing prone individual group.	Alert to injury and infectious hazards. Zero leptospirosis cases reported	Assurance behavior.

Source: authors' interview data

5.1. Invisible but existing risk

The first issue asked is how residents perceive safety that is not visible but exists. Informants from North Surabaya perceived the danger of flooding due to tidal waves or high tides as being greater than in other areas. The northern side of the Surabaya region is a coastal area that is prone to tidal floods. Therefore they are more alert during the full moon and at certain times. Residents are very dependent on early warning information issued by the authorities. Rob floods, especially in the Morokrembangan area of Surabaya Indonesia are floods that affected people longer for days than inundation floods caused by rain. Safety that is important according to residents is comfortable mobility around the environment. Walking in a puddle is an

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inconvenience that is full of risks. At this time, injuries may occur even more frequently. When carrying out this activity, residents tend to take off their footwear and walk barefoot. The risks faced are feet stepping on sharp objects, injuries, slipping, and being bitten by animals. Residents avoid the risk of electric shock due to tidal floods they have time to prepare to secure the electricity plug.

East Surabaya and Central Surabaya often suffer from flooding and are densely populated residential areas. This area includes Gubeng, Rungkut, Tenggilis Mejoyo, Sukolilo, and Tambaksari sub-districts where flooding first occurred on the main road and inundated residential areas. Meanwhile, on the main traffic highway, the puddle receded very quickly. Even though the water has receded from the main road, this does not mean that the village area full of residential houses has also receded. On the other hand, the water stagnates so residents' activities are greatly disrupted. The vulnerable residents put their selves at risk being in a puddle inside the house that turn out experiencing skin maceration or skin drying out and becoming wrinkled. The danger that lurks is that wound infections occur more quickly, especially diabetics and the elderly people. The city government authorities asked the fire brigade to help residents in order to control flooding in residential areas.

South Surabaya is an area that is also a flood point for residential areas and traffic routes. Geographically, this area is affected by flooding because it is crossed by the longest river drainage towards the sea. And close to the gateway between the cities of Surabaya-Sidoarjo Indonesia. As an inter-city route, the mobility of residents who live outside Surabaya and work in the Surabaya city area will pass through this area. The flood overflow occurred because the water flow in the Jagir, and Gunungsari rivers and the estuary to the Wonorejo Mangrove area was very high. What's worse is that if the sea water is high, the water will not be stagnant in people's homes for quite a long time. In this area in the South, apart from residential areas, there are also many offices and industries. The disadvantage that lurks for residents is the obstruction of traffic activities and economic activities. Apart from that, the potential for injury is a large number of utility cable installations, so many residents are wary of electric shock injuries. Not only that, residential areas and schools were flooded, making residents more wary of valuables. The risk of injury due to flooding in this area is not widely reported by residents. However, health officials assume that the minimum number of reported injuries during flooding is a perceived risk that is not dangerous.

On the other hand, a very memorable moment was when the Mayor of Surabaya's mother was seriously injured while surveying the floods in the West Surabaya area. While walking in the middle of a puddle, he stepped on something which caused his leg to sprain. He was medically treated and stated to have suffered a 6 cm torn Achilles tendon. Of course, for residents who are aware, the potential hazards of flooding are often not realized. However, when that risk becomes a muscle tear injury it becomes something important. As a result, Mayor Tri Risma Harini had to comply with the doctor's advice not to carry out outdoor activities.

It is not impossible that in other areas, the number of injuries caused by floodwaters will be impossible to read. It was only because of the incident experienced by the Surabaya Mayor that residents living in the Banyu Urip area and surrounding areas became aware of the potential for serious injury during flooding. This data is still latent because there is no reporting that specifies the correlation between flood events and injuries experienced. It could be that the injury is stepping on a sharp object, sprains, slipping, bone, and muscle injuries, which are considered reasonable risks. However, this increased risk becomes more potentially dangerous if experienced by vulnerable groups such as the elderly, children, pregnant women, diabetics, and others. Dangers found in homes during flooding include lit electrical utilities, sharp objects, and objects that can easily fall. Other biological hazards are animal stings, dangerous bacteria, and potential infections for diabetics due to wounds and floodwaters. Data on leptospirosis infection in South and East Surabaya was barely found zero in one study (Jellia Wibisono et al., 2016), however, cases of leptospirosis infection and the appropriateness of home security were found in the West Surabaya area, namely Wiyung sub-district (Ramadhan et al., 2018). The cases that the interviewees complained about were injuries due to slips and collisions with unstable objects.

5.2. Adaptation system

Flooding often occurs along main traffic roads and densely populated villages. The Surabaya city government has built 200 drainage channels and 6 pump houses in Surabaya, Indonesia. The work carried out by the Department of Water Resources and Highways Surabaya is targeted to be completed by the end of 2023. This is in line with Surabaya Mayor, Eri Cahyadi's commitment to prioritize flood-free residential areas. The adaptation desired by the city government is citizen participation in dealing with floods in residents' homes. Citizen participation is also supported by public trust in the city government in resolving flooding. At least the public is also asked to adapt by keeping drains clean and free from rubbish blockages.

We recorded from the FGD that the adaptation that village residents often carry out regularly is community service in cleaning up their village. This community service is carried out voluntarily by village residents as a form of social responsibility. Village residents carry out improvements, regularly check drainage channels, and create a multi-functional space for the public. This is different from residents in housing in the upper middle social group who prefer to pay unskilled workers to clean drainage

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channels in their respective residences. Or even hand over this environmental problem to the developer. From this data, we analyze that economic capacity influences the adaptation system.

The next adaptation is to make mini embankments and wooden planks around the houses in densely populated villages. Meanwhile, in the upper-middle-class economic group houses, they raised the ground of the house and also made embankments in certain places. The residents who have been economically better prefer to provide anti-slip mats to reduce the risk of slipping and injury. Meanwhile, residents in the densely slum area made shelves to save valuables properties. Some of poor people rather less ignore the importance of wearing footwear or boots. They are quite careful about falling injuries, even though other dangers are also lurking. Especially in the north Surabaya area which is often hit by tidal floods, residents put up signs on the roads and made lots of platforms for dry areas inside the houses. According to residents in North Surabaya, tidal floods are the most difficult to adapt to because they can be flooded for days. They can drain floodwaters in houses after sea water recedes.

5.3. Dynamics and Variability of response

The actions taken by the people of North Surabaya to deal with tidal floods are almost non-existent. They no longer have a solution for tidal floods. They adapt to the environment by adjusting to the situation, being passive and only taking preventive action against injury by marking dangerous spots. Residential evacuation is only carried out if the tidal flood has reached 30 meters and above. Residents chose to remain silent and save their valuables. Why are they pessimistic about this flood situation? This is due to problems with spatial changes and climate change. Spatial changes that occur in the North Surabaya region are due to industrial and residential development. The northern region is a maritime, fishing, and industrial base. Because of this, many areas of land used to store water, such as ponds, have changed their function to become factories, warehouses, and residential areas. Meanwhile, climate change is becoming more likely to allow sea water temperatures to warm which in turn will worsen tidal flood inundation.

In other areas in South, East, West, and Central Surabaya, the steps taken by residents are almost all the same. These steps include preparations to secure valuables before flooding occurs. The next safeguard is the electrical switch and utility cables that are still attached to the switch. These are the two main steps in flood mitigation. Residents are more careful in activities inside the house, such as walking slowly, avoiding slippery floors, and protecting individuals with chronic diabetes from pools of dirty water. On the other hand, puddles that enter the house attract children to play. This is normal and is still within limits that can be safely tolerated as long as the activities and surrounding security are supervised by parents. For example, keep children away from electricity and garbage or dirt disposal.

Literacy regarding the causes of flooding is a fundamental thing for residents to have and education begins at the age of young children. However, when researchers asked about experiences of injuries caused by flooding, the interviewees said that there were reports of residents experiencing at least some injuries such as slipping, falling, and stepping on sharp objects. Some even suffered bone and muscle injuries due to falling. They responded that injuries due to floodwater were normal, but they sometimes never expected worse effects. Because of this, they do not go to health facilities but choose to treat themselves. First aid for every household is to prepare painkillers and rubbing oil to massage the affected area. Some residents may suffer serious injuries such as sprain and strain pain and even fractured bones while carrying out activities in the house due to slippery floors and hitting hard objects.

5.4. Confidence in a safe environment or learning from past injury failures.

The level of public awareness of the dangers of flooding in Surabaya is at a low to medium level. This is stated in the strategic plan of the Surabaya Regional Agency for Disaster Management for 2021-2026 (Bappedalitbang Surabaya, 2022). This statement is related to how to correlate the performance of regional companion organizations with public awareness. In this Strategic Plan document, Regional Agency for Disaster Management Surabaya still has to integrate disaster risk with mitigation measures. Regional Agency for Disaster Management is still working to increase citizen participation in the "*Kampung Tangguh"* or Tough Village program as a communal project continuing from the COVID-19 era.

The most crucial problem according to the Regional Disaster Management Agency's Strategic Plan document is the lack of communication integration and data integration for making decisions. Meanwhile, the results of several studies show that some of the people of Surabaya have implemented disaster mitigation and others have not. This process follows from the social construction process and the level of preparedness of Surabaya residents based on individual experience in facing specific disasters (Putri, 2023; Sahab & Nugroho Soegiono, 2021).

According to health activists from the northern Surabaya region, the actions taken were mostly passive adaptation. This is because there are more social problems than construction problems. They are more emotionally attached to the place because it is related to livelihoods so relocating residents becomes a big challenge. However, the residents of North Surabaya prefer to wait for

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direction and guidance and are better prepared for mitigation training. The health activists also explained that residents are starting to empower themselves by being alert protecting themselves and their families when the early warnings of tidal floods and tidal waves issued.

The health activists from Central and East Surabaya emphasized that residents learned more from their experiences of flood-related injuries such as electric shocks and slips at home. They also recovered several valuables. Residents with better economic capacity raised floors and repaired sewer lines. Moreover, the access to health facilities is very easy and pervasive, starting from health clinics and hospitals, so residents tend to feel safe about their health during floods.

The residents in the West Surabaya area have learned more from past experiences in dealing with floods. The social problem that has the potential to arise is inequality on the land surface. The higher land surface has many elite housing complexes, while the lower surface is home to lower-middle-class residents. Flooding occurs due to flood runoff from elite housing complexes located higher. Residents have been suffering for more than 20 years in the Lontar area of West Surabaya. During these two decades, they learned to avoid injury by marking gray spots, uneven ground surfaces, and other dangers in the home and surrounding environment.

All interviewees stated that the flood management program and safety awareness at home were carried out through community empowerment. The groups of people who are easiest to participate are people from the lower middle class who are used to being flooded and are at higher risk of injury compared to people who live in elite areas. This means that the safety paradox is that the level of awareness of the dangers of flooding is obtained from groups of residents who frequently experience flooding. They prioritize groups vulnerable to injury, namely the elderly, people with severe diabetes, pregnant women, children, and babies, careless teenagers and adults, and domestic workers. Meanwhile, residents whose homes are luxurious with home safety facilities do not feel the danger of injury due to flooding.

Despite the potential for discrepancies in flood risk awareness between weak and capable residents, the Surabaya city government is still implementing a mitigation program. Mitigation programs are continuing community empowerment programs during the COVID-19 era, namely resilient villages. The number of resilient villages built by the Surabaya City Government is 154 sub-districts, a 3-fold increase from 2018 when there were only 47 sub-districts (Bappedalitbang Surabaya, 2022). This is the goal of the Surabaya city government to prevent community-based disasters.

6. FINDINGS / RESULTS

This article generates several important findings about security paradoxes and fundamental social issues. The security paradox is found based on three things, namely switching of basic human needs, needs, wants, and barriers. Firstly, the need for security is related to awareness of danger. However, because Surabaya residents view the risk as not having an immediate impact and are accustomed to extreme dry and wet climate conditions, they will change their safety needs by adapting and not being too focused.

Secondly, The Needs and Wants are two concepts that contain more paradoxes. Residents who have economic advantages will want more safety, so home safety is implemented by raising their houses. In contrast to residents who do not have economic means, safety during floods is only a wish. This means, almost Surabaya residents often put their selves at flood risks. This is because they realize the basic need of safety is important but contrast to the low economic capability. So, they ponder safety is only Wants and Wishes that can be postponed for a while.

Third, the main barrier to home safety is the problem of repairing building construction which requires high costs and is related to the economic capacity of residents. Not all residents have the economic capacity to raise their houses, so the adaptations that are carried out are preventive measures such as cleaning drainage and sewage in front of the house, making embankments around the house, making shelves to store goods in high places, raising electrical plugs. This at-risk situation is fully recognized by residents, but this economic barrier is what makes safety not too urgent.

7. CONCLUSION / IMPLICATIONS

Home should be a safe and comfortable place to live. However, if residents are not careful, danger will lurk at any time. Even though it is sometimes trivial, it can lead to serious and even fatal consequences. Being careful and maintaining safety is not only done in workplaces, offices, factories, shops, tourist attractions, public spaces, and roads but also at homes.

Cases of injuries that occur at home are still higher than cases of accidents on the highway. Data released by the Ministry of Health from 2018 to date provides the basic importance of home safety literacy and education, especially during flood disasters. During a flood disaster, there is a high potential for injuries to occur, so this research finds a paradox in home safety during a flood. Safety paradox analysis using the James Reasons model generates whole findings. First, the residents of Surabaya are fully aware of the dangers that lurk even though the dangers are not visible, especially in the case of tidal floods. Second, the adaptation

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system adopted is to defend with embankments, protect family members who are prone to injury, clean drainage and sewage, and raise the floor of the houses. Third, residents learn a lot from the past to respond to future risks. They tend to be more concerned about injuries from falls, slips, and electrocutions than the risk of disease infection during floods. Finally, Surabaya residents learn more from past experiences regarding flood injuries than from confidence in safety. In certain cases, patients or sufferers who are not covered by health insurance or access to health facilities will make things difficult. For this reason, the Indonesian city government of Surabaya has made this program a communal program to educate and inform about the actions taken to reduce injuries due to dangers that threaten safety at home during floods.

RECOMMENDATION

This article provides a qualitative data overview of how the paradox of home safety during floods. This is an extremely challenge for city governments that are prone to flood disasters. It seems that the people of Surabaya Indonesia are aware of the dangers of flooding, but due to different aspects of economic capacity and adaptation, this is what makes the paradox between awareness and safety biased. This safety emerged when Surabaya residents experienced floods such as periodic tidal floods. Therefore, to remain in a state of alertness and self-awareness, researchers recommend continuing the risk communication program for home safety which is carried out communally as an adaptation to an environment that is prone to flooding.

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REFERENCES

Alfiani, V. (2016). Persepsi Masyarakat terkait Kenyamanan Tinggal di Pemukiman Kumuh (Studi Kasus: Pemukiman Kumuh Kelurahan Keputih Kecamatan Sukolilo Kota Surabaya). *Swara Bhumi*.

Badan Nasional Penanggulangan Bencana. (2023, November 23). *Data Informasi Bencana Indonesia (DIBI)*. Badan Nasional Penanggulangan Bencana. https://dibi.bnpb.go.id/

Badan Penelitian dan Pengembangan Kesehatan, -. (2018). Laporan Nasional Riskesdas 2018. *Kementerian Kesehatan Republik Indonesia*, 146–379.

Badan Penyelenggara Jaminan Sosial. (2015). 105.383 kasus kecelakaan kerja di Kabupaten Tangerang. *BPJS Ketenagakerjaan*.

Bando, J. J., Kawatu, P. A. T., Ratag, B. T., Kesehatan, F., Universitas, M., Manado, S. R., Konsep Dasar Kesehatan, A., & Rumah, K. (2020). Gambaran Penerapan Program Keselamatan Dan Kesehatan Kerja Rumah Sakit (K3RS) Di Rumah Sakit Advent Manado. *KESMAS: Jurnal Kesehatan Masyarakat Universitas Sam Ratulangi*, *9*(2). https://ejournal.unsrat.ac.id/v3/index.php/kesmas/article/view/29128

Bappedalitbang Surabaya. (2022). *Evaluasi RPJPD 2005-2025*. Badan Perencanaan Pembangunan Penelitian Dan Pengembangan Daerah Kota Surabaya. https://bappedalitbang.surabaya.go.id/dokumen/item/126-evaluasi-rpjpd-2005-2025

Bressan, S., Gallo, E., Tirelli, F., Gregori, D., & Da Dalt, L. (2021). Lockdown: more domestic accidents than COVID-19 in children. *Archives of Disease in Childhood*, *106*(2), e3–e3. https://doi.org/10.1136/ARCHDISCHILD-2020-319547

David Saut, P. (2018). *Angka Kecelakaan Kerja RI Meningkat ke 123 Ribu Kasus di 2017*. DetikFinance.

Dhanang Puspita; David Nakka Gasong; Harvian Charisma Bangngu. (2018). Manajemen Keamanan Lingkungan di Panti Jompo Salib Putih Terhadap Risiko Jatuh Pada Lansia. *Indonesian Journal of Nursing Research (IJNR)*, *1*(2). https://doi.org/https://doi.org/10.35473/ijnr.v1i2.179

Dransch, D., Rotzoll, H., Poser, K., Gaspar-Escribano, J. M., Iturrioz, T., Is, W., Education, P., Lee, I., Kim, J., Roeser, S., Hillerbrand, R., Sandin, P., Peterson, M., Gigerenzer, G., Edwards, A., Yamagishi, K., Loiacono, E., Watson, R., Goodhue, D., … Pidgeon, N. (2004). Public Hazards Communication and Education: The State of the Art. *Informer*. https://doi.org/10.5194/nhess-11-359-2011

Erni Suharini, D. L. S. dan E. K. D. L. S. E. K. (2015). Pembelajaran Kebencanaan Bagi Masyarakat Di Daerah Rawan Bencana Banjir Das Beringin Kota Semarang. *Forum Ilmu Sosial*, *42*(2), 184–195. https://doi.org/10.15294/FIS.V42I2.10143

Gielen, A. C., Bachman, G., Badaki-Makun, O., Johnson, R. M., McDonald, E., Omaki, E., Pollack Porter, K. M., Ryan, L., & Shields, W. (2020). National survey of home injuries during the time of COVID-19: who is at risk? *Injury Epidemiology*, *7*(1), 1–4. https://doi.org/10.1186/S40621-020-00291-W/TABLES/1

Haer, T., Husby, T. G., Botzen, W. J. W., & Aerts, J. C. J. H. (2020). The safe development paradox: An agent-based model for flood risk under climate change in the European Union. *Global Environmental Change*, *60*, 102009. https://doi.org/10.1016/J.GLOENVCHA.2019.102009

Harahap, T. (2021). Komparasi Indikator Rumah Layak Huni dan Permukiman Kumuh Indonesia. *Journal of Science and Applicative Technology*. https://doi.org/10.35472/jsat.v5i1.426

DOI: 10.47505/IJRSS.2023.V4.12.3

Hidayat, L., Rahayu, B Fuad Paramita; Khadafi, R. N., Purwanta, A. E. B., Saputra, M. A., Sumardiyono, E., & Triangga, A. F. R. (2021). A Comparative Multicenter Study on the Epidemiology of Traumatic Fractures During the COVID-19 Early Emergency Response Period in Yogyakarta Special Region, Indonesia. *Quality: Jurnal Kesehatan*, *16*(1), 73–81. https://doi.org/10.21203/RS.3.RS-257599/V1

Hu, X., Casey, T., & Griffin, M. (2020). You can have your cake and eat it too: Embracing paradox of safety as source of progress in safety science. *Safety Science*, *130*, 104824. https://doi.org/10.1016/J.SSCI.2020.104824

Jellia Wibisono, F., Marty Yanestria, S., Kedokteran Hewan, F., & Wijaya Kusuma Surabaya, U. (2016). Outbreak Leptospirosis Dengan Vektor Tikus Pada Daerah Rawan Banjir Di Surabaya. *Jurnal Kajian Veteriner*, *4*(2), 1–9. https://doi.org/10.35508/JKV.V4I2.1015

Katherina, L. K. (2018). Dinamika Pertumbuhan Penduduk Dan Kejadian Banjir Di Kota: Kasus Surabaya. *Jurnal Kependudukan Indonesia*, *12*(2), 131–144. https://ejurnal.kependudukan.lipi.go.id/index.php/jki/article/view/201

Kendrick, D., Young, B., Mason-Jones, A. J., Ilyas, N., Achana, F. A., Cooper, N. J., Hubbard, S. J., Sutton, A. J., Smith, S., Wynn, P., Mulvaney, C., Watson, M. C., & Coupland, C. (2013). Home safety education and provision of safety equipment for injury prevention (Review). In *Evidence-Based Child Health*. https://doi.org/10.1002/ebch.1911

Lamba, C. T., Munayang, H., & Kandou, L. F. J. (2017). Gambaran Tingkat Kecemasan pada Warga yang Tinggal di Daerah Rawan Banjir Khususnya Warga di Kelurahan Tikala Ares Kota Manado. *E-CliniC*, *5*(1). https://doi.org/10.35790/ECL.V5I1.15526

Maharani, F. T., & Utari, D. (2021). Occupational for elementary students to raise safety and health awareness at schools and homes. *Community Empowerment*, *6*(5), 769–774. https://doi.org/10.31603/CE.4491

Maharani, L. A., & Umilia, E. (2014). Tipologi Permukiman Kumuh di Pinggiran Selatan Kota Surabaya. *Jurnal Teknik ITS*, *3*(2), C102–C106. https://doi.org/10.12962/j23373539.v3i2.7231

Minton, A. (2018). The paradox of safety and fear: Security in public space. *Architectural Design*. https://doi.org/10.1002/ad.2305

Murtinugraha, R. E., & Anisah. (2021). Peningkatan Pemahaman K3 Pekerjaan Konstruksi bagi Tukang Bangunan di Kecamatan Muara Gembong, Kabupaten Bekasi. *Jurnal Abditek*, *1*(1).

Palmer, J. L., Langan, J. C., Krampe, J., Krieger, M., Lorenz, R. A., Schneider, J. K., Smith, J. M., & Lach, H. W. (2014). A model of risk reduction for older adults vulnerable to nursing home placement. *Research and Theory for Nursing Practice*.

Pidgeon, N. (1998). Safety culture: Key theoretical issues. *Work and Stress*. https://doi.org/10.1080/02678379808256862

Prasetyo, W., & Tjahjono, H. D. (2021). Pendidikan Kesehatan Terhadap Pengetahuan Kesiapsiagaan Masyarakat Dalam Menghadapi Bencana Banjir Di Daerah Petemon Surabaya. *Jurnal Keperawatan*, *10*(1), 9–17. https://doi.org/10.47560/KEP.V10I1.266

Prayojana, T. W., Fazri, A. N., & Saputra, B. (2020). Dampak Urbanisasi Terhadap Pemukiman Kumuh (SLUMAREA). *Jurnal Kependudukan Dan Pembangunan Lingkungan*.

Pristianto, Arif; Andini, Rizqi Mutia; Naufal, A. F. (2022). Kejadian Cedera Muskuloskeletal Saat Melakukan Exercise Selama Masa Pandemi Covid-19 | Quality : Jurnal Kesehatan. *Quality : Jurnal Kesehatan*, *16*(1), 73–81. https://ejournal.poltekkesjakarta1.ac.id/index.php/adm/article/view/439

Putri, D. E. (2023). Kesiapsiagaan Masyarakat Surabaya Terhadap Potensi Bencana Ditinjau Dari Teori Konstruksi Sosial. *Jurnal Dinamika Sosial Budaya*, *25*(2), 277–284. https://doi.org/10.26623/JDSB.V25I2.4437

Putri Sinta, C., Rahmawatie Ratna Budi Utami, D., Ilmu Keperawatan, S., & Ilmu Kesehatan, F. (2022). Tingkat Kecemasan Ibu dalam Menghadapi Banjir di Kelurahan Sangkrah Kota Surakarta. *Sehat Rakyat: Jurnal Kesehatan Masyarakat*, *1*(4), 356–362. https://doi.org/10.54259/SEHATRAKYAT.V1I4.1145

Ramadhan, N. P., Rahayu, U., & Thohari, I. (2018). ANALISIS KONDISI RUMAH SEKITAR RUMAH PENDERITA LEPTOSPIROSIS DI KOTA SURABAYA TAHUN 2018 (Di Kelurahan Babatan, Kecamatan Wiyung, Kota Surabaya, Jawa Timur). *GEMA LINGKUNGAN KESEHATAN*, *16*(2). https://doi.org/10.36568/KESLING.V16I2.827

Ramli, S., & Husjain, D. (2010). *Pedoman Praktis Manajemen Bencana (Disaster Management)*. Dian Rakyat.

Reason, J. (2000). Safety paradoxes and safety culture. *Injury Control and Safety Promotion*. https://doi.org/10.1076/1566-0974(200003)7:1;1-v;ft003

Refnitasari, L., Cahyaka, H. W., Handayani, K. D., & Amudi, A. (2022). Analisis Kerentanan Fisik Wilayah Pesisir Utara Kota Surabaya Terhadap Bencana Banjir ROB. *Jurnal Tata Kota Dan Daerah*, *14*(2), 55-62–55 – 62. https://doi.org/10.21776/UB.TAKODA.2022.014.02.2

Rosita, N. A., & Dwi Rohmadiani, L. (2020). Tingkat Kesesuaian Sarana dan Prasarana Perumahan Berdasarkan Peraturan Pemerintah. *Jurnal Plano Buana*, *1*(1), 46–54. https://doi.org/10.36456/JPB.V1I1.2669

Ryani, Parashakti, D., & Putriawati. (2020). Pengaruh Keselamatan Dan Kesehatan Kerja (K3), Lingkungan Kerja Dan Beban Kerja Terhadap Kinerja Karyawan. *Jurnal Ilmu Manajemen Terapan*, *1*(3), 290–304. https://doi.org/10.31933/JIMT.V1I3.113

Sahab, A., & Nugroho Soegiono, A. (2021). Disaster Risk Reduction Pendidikan Kebencanaan Untuk Membangun Kesadaran, Kewaspadaan, Dan Kesiapsiagaan Masyarakat Di Kota Surabaya. *Jurnal Layanan Masyarakat (Journal of Public Services)*,

DOI: 10.47505/IJRSS.2023.V4.12.3

5(1), 19–25. https://doi.org/10.20473/JLM.V5I1.2021.19-25

Saifudin, A., Andiek Maulana, M., Agung, A., & Damarnegara, N. S. (2023). Analisis Kerentanan Banjir Menggunakan Data Citra Satelit dan Machine Learning di Kota Surabaya. *Jurnal Aplikasi Teknik Sipil*, *21*(3), 205–212. https://doi.org/10.12962/J2579-891X.V21I3.15910

Susanto, S., Karisma, D. A., Budi, K. C., Sumargono, S., & Winarno, B. (2020). Faktor Yang Berhubungan Dengan Pengetahuan Penerapan Keselamatan Kerja Pada Pekerja Konstruksi. *Civilla : Jurnal Teknik Sipil Universitas Islam Lamongan*, *5*(2), 476–485. https://doi.org/10.30736/CVL.V5I2.494

Swastika, B., Wibowo, P. A., & Abidin, Z. (2022). Pengaruh Keselamatan dan Kesehatan Kerja (K3) Terhadap Produktivitas Kerja Karyawan. *Jurnal Ilmu Kesehatan Masyarakat*, *11*(02), 197–204. https://doi.org/10.33221/JIKM.V11I02.1220

World Health Organization. (2023, November 23). *World Health Organization 2023 data.who.int, Indonesia [Country overview]. (Accessed on 23 November 2023)*. World Health Organization. https://data.who.int/countries/360

Zevalkink, J., Riksen-Walraven, J. M., & Bradley, R. H. (2008). The quality of children's home environment and attachment security in Indonesia. *Journal of Genetic Psychology*, *169*(1), 72–91. https://doi.org/10.3200/GNTP.169.1.72-91

DOI: 10.47505/IJRSS.2023.V4.12.3