

Perceived Flood Risk Awareness and Preparedness of Thai Citizens: Gender Comparison

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Abstract: The objective of this study was to compare mean differences between males and females in terms of their perception toward flood risk awareness and preparedness. This study gathered data from high school students who lived in flooding areas in Phetchaburi province, Thailand. Data collection permission was conducted prior to distributing a survey questionnaire. A total of 414 participants agreed to participate in this study by completing a survey questionnaire and returned it with completion. A modified version of flood awareness and preparedness questionnaire originally developed by Promsri (2017) was utilized for data collection. The overall perceived flood risk awareness and preparedness of Phetchaburi citizens was reported at a high level ($M = 4.27$, $S.D. = .398$). Results demonstrated a significant difference in perceived flood awareness and preparedness between males and females ($t = -2.656$, $p = .008$). Further recommendations and research implications were also discussed.

Keywords: Flood Risk Awareness, Flood Risk Preparedness, Thai Citizens, Gender Differences.

INTRODUCTION

Climate change significantly increases the risk of floods worldwide, particularly the areas with lack of effective preparation and response [1]. The Organization for Economic Cooperation and Development [2] reported that flood incidents caused approximately over \$40 billion of the loss annually in the past years. In Thailand, floods are the most common and widespread natural disaster affecting many communities across the country. The historical flood events in the year of 2011 massively affected 9.5 million people in 65 of 76 provinces in Thailand and caused the death of 813 people across the country. The estimate of financial loss in this flood event was \$45.7 billion, which was ranked in the fourth place of natural disasters loss around the world [3, 4].

Although the occurrence of historical flood disaster incident in Thailand may have resulted from various forces such as heavy rains, overflowing rivers, or urban drainage basins, the most significant factor that caused the massive loss in this event was the lack of citizen preparation [5]. Flood risk awareness and preparedness is a vital key to mitigate the effect of flood disasters and needed to take into account for disaster management agencies for increasing this capability among Thai citizens.

Phetchaburi province is one of numerous provinces in Thailand where flood disasters consistently affected people and communities in the past few years (2016-2018). In particular, Department of Disaster Prevention and Mitigation reported that six districts of Phetchaburi were affected by flood events in 2019. The major problem of flood incidents in this area was caused by overflowing river, urban drainage basins, and a lack of vegetation, which related disaster management agencies disregarded to seriously resolve these problems [6]. Nevertheless, the structural and physical problems may take times and need to be treated in parallel with increasing citizens' awareness and preparedness. As flood risk awareness and preparedness is very critical for flood risk mitigation, this study, therefore; attempted to investigate perceived flood risk awareness and preparedness among Phetchaburi citizens. In addition, as social forces play a vital role to form different behavioral tendencies in disasters preparedness [7], gender, one of social forces, is

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considered as the critical factor that needs to be focused. Furthermore, previous literature revealed the significance of gender in disaster reduction leading to better results in disaster management and preparation [8]. Hence, gender sensitivity in emergency management particularly flood disasters has become an interest topic to place more emphasis [9-10]. In Thai context, a few studies have placed their emphasis on gender sensitivity and differences in flood risk disasters. Therefore, this study attempted to fill the gap in literatures by examining gender differences in flood risk awareness and preparedness in Thai context.

LITERATURE REVIEWS

After reviewing literatures in gender and flood disasters, the remarkable literatures were found and presented as follows:

Chanty and Samchan [9] conducted a mixed methodology study on flood impacts on women in Cambodia. This study focused on gender sensitivity on flood disaster response. The key findings of this study indicated that Cambodian women were more concerned with flood security, assets and belongings, and more intensive works before flood, and increased their stresses and levels of concerns with safety and security, health and hygiene, privacy, travel difficulty during flood, and concerned with food security, households' debts, and increased psychological stress after flood. Overall, women had taken more responsibilities than men in two flooding stages, which were pre-flood and post-flood. In contrast, men had a higher responsibilities than women at the during flood stage.

Silva and Jayathilaka [8] collected data from 22 households in one city in Sri Lanka using both quantitative and qualitative approaches for data collection. This study found that women were more vulnerable to flood disaster reduction than men caused by differences in employment status, income, social roles, norms, and restrictions. This study encouraged the development in all related disaster planning and response activities to increase women participation and involvement in flood disaster reduction.

Cvetković *et al.* [10] investigated the flood risk perceptions and preparedness of men and women in Serbia. This study conducted the face-to-face interviews with 2,500 participants in 19 municipalities. Findings showed that men had a stronger confidence in their abilities to handle flood events and a greater perceived flood preparation than women. However, women demonstrated a deeper understanding of flood incidents than men. In addition, women were found to have more household caring attitudes and behaviors and willingness to help flood victims than men.

Based on the literature reviews, most research attempted to investigate gender difference in terms of flood reduction and preparation. No study focused its search on flood risk awareness. In addition, these studies revealed inconsistent findings due to the cultural difference. As a result, this study aimed at scrutinizing gender differences in flood risk awareness and preparedness in Thai context to enhance a body of knowledge in this area.

Research hypothesis of this study was proposed as "there was a significant difference in flood risk awareness and preparedness between male and female citizens of Phetchaburi province."

METHODOLOGY

This descriptive study aimed at examining gender differences in perceived flood awareness and preparedness. Data were gathered from higher school students who lived in flooding areas in Phetchaburi province. The lists of high schools in Phetchaburi province were written on a piece of paper sorting out to different districts and randomly selected by using simple random sampling technique. Four schools were finally selected for data collection. The consent letters were sent to the directors of four schools in different districts where flood disasters occurred in the past two years to ask for their permission for data collection. All of these schools agreed to participate in this study and allowed the researchers to collect data from their high school students. Students of each school were randomly selected to ensure the representativeness of population. A total of 414 students from four different schools agreed to participate in this study and fill out the survey questionnaire, and returned it with completion. A 30-item of modified version of perceived flood awareness and preparedness was utilized for data collection. This instrument was adapted from the original version developed by Promsri [5]. This scale measurement was a 5-point rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure the quality of this instrument, reliability with Cronbach's alpha was tested. The alpha score of 0.926 indicated the high reliability of this measurement scale. To compare mean differences in perceived flood awareness preparedness between males and females, independent samples t-test analysis was computed.

RESULTS

Analysis of frequency distribution revealed that the majority of participants in this study was female (63.8%). More than a half of them had ever experienced flood disasters (54.8%). Results showed that the overall perceived flood risk awareness and preparedness of Phetchaburi citizens was at a high level ($M = 4.27$, $S.D. = .398$). To test research hypothesis, independent samples t-test analysis was conducted to compare gender differences in perceived flood awareness preparedness among high school students in flooding areas in Phetchaburi province. Table 1 demonstrated a significant difference in perceived flood awareness and preparedness between males and females ($t = -2.656$, $p = .008$). Results showed that female participants ($M = 4.31$) had a higher perceived flood awareness and preparedness than males ($M = 4.20$).

Table-1: Gender Difference in Perceived Flood Awareness and Preparedness (n=414)

Gender				df	t	Sig
Male (n=150)		Female (n=264)				
M	S.D.	M	S.D.			
4.20	.407	4.31	.388	412	-2.656	.008**

CONCLUSION, DISCUSSIONS, AND RECOMMENDATIONS

This study aimed at examining gender differences in perceived flood awareness and preparedness. Results showed that the overall perceived flood risk awareness and preparedness of Phetchaburi citizens was at a high level, which implied that they realized the importance of flood risk preparedness. In addition, results found a significant difference in perceived flood awareness and preparedness between males and females. Female participants had a higher score of perceived flood awareness and preparedness than male participants. This finding was inconsistent with previous study of Cvetković *et al.* [10] in which men had a greater individual and household preparedness than women. This could be explained that females demonstrated the importance of flood awareness and preparedness as they were very careful and realized that the better preparations, the lower vulnerabilities. However, this research supported the findings of Chanty and Samchan [9] in which women were found to have more concerns on flood risk disasters than men.

Like other studies, this study has some limitations. As samples of this study were gathered solely from higher school students, this may not represent the citizens of Phetchaburi province who had been affected by flood disasters. Therefore, the further study should extend its samples to people in other areas rather than high school students. Also, as the instrument of this study focused on perceived flood risk awareness and preparedness among citizens, the findings of this study only reflected their perceptions towards flood risk awareness and preparedness. The next study is recommended to place more emphasis on citizens' preparedness and response in different stages of flood disasters reduction.

For research implications, disaster management agencies and local district organizations should take gender differences into their account for flood risk awareness preparedness programs and activities to enhance capability of Phetchaburi citizens to effectively cope with flood disasters and events.

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