Research
Report

Flood Disaster Preparedness Behavior among Heads of Households in Rural Muang District, Trang Province of Thailand

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Abstract

A cross-sectional descriptive study was conducted by interviewing two hundred and eleven heads of households in Muang District, Trang Province of Thailand. A structured questionnaire was used to collect data in 12 villages of 2 Sub-districts from18th to 21st of January 2007. The aims were to identify flood disaster preparedness behavior among heads of households and to identify related factors towards flood disaster preparedness behavior such as socio-demographic factors, predisposing factors, reinforcing factors and enabling factors. The study investigated the association between various independent variables and dependent variable.

The result revealed that the more than one-half of heads of households had the good level of flood disaster preparedness behavior with good knowledge and high to moderate perception. Regarding related factors, it was found that following factors were statistically significant associated with flood preparedness behavior: sex, number of family member, occupation, family income, education, knowledge, perception, frequency of flood experiences, involvement community-based flood disaster preparedness activities.

Based on the study findings, it is recommended that community and local government have to play an important role on maintaining and improving of the flood disaster preparedness behavior, strengthening community-based disaster preparedness activities.

Keywords

Flood Disaster Preparedness Behavior

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Research
Report

พฤติกรรมการเตรียมความพร้อมของหัวหน้าครอบครัวในกรณีเกิดน้ำท่วมใหญ่ในเขตชนบทของอำเภอเมือง จังหวัดตรัง ประเทศไทย

โนริโกะ โทมาบิชิ
บุญยง เกี่ยวการค้า
จิราพร ชมพิกุล

บทคัดย่อ

การวิจัยนี้เป็นการศึกษาภาคตัดขวางเชิงพรรณนา โดยสัมภาษณ์ 211 หัวหน้าครอบครัว ในอำเภอเมือง จังหวัดตรัง ประเทศไทย การเก็บข้อมูลใช้แบบสอบถามใน 12 หมู่บ้านของ 2 ตำบลในช่วงวันที่ 18 ถึง 21 มกราคม 2550 วัตถุประสงค์เพื่อระบุพฤติกรรมการเตรียมความพร้อมของหัวหน้าครอบครัวในกรณีเกิดน้ำท่วมใหญ่และระบุปัจจัยที่เกี่ยวข้องต่อพฤติกรรมการเตรียมความพร้อมของหัวหน้าครอบครัวในกรณีเกิดน้ำท่วมใหญ่ ได้แก่ ปัจจัยทางภูมิศาสตร์และสังคม ปัจจัยนำ ปัจจัยเสริม และปัจจัยเอื้อ นอกจากนี้การวิจัยยังได้ศึกษาความสัมพันธ์ระหว่างตัวแปรตามและตัวแปรอิสระดังกล่าว

ผลการศึกษาพบว่ามากกว่าครึ่งหนึ่งของหัวหน้าครอบครัว มีพฤติกรรมการเตรียมความพร้อมในกรณีเกิดน้ำท่วมใหญ่อยู่ในเกณฑ์ดี มีองค์ความรู้ระดับดีและการรับรู้อยู่ในระดับปานกลางถึงสูง เมื่อพิจารณาถึงปัจจัยที่เกี่ยวข้อง การวิจัยนี้พบว่า ปัจจัยที่มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติกับพฤติกรรมการเตรียมความพร้อมในกรณีเกิดน้ำท่วมใหญ่ ได้แก่ เพศ จำนวนสมาชิกของครอบครัว อาชีพ รายได้ต่อครอบครัว การศึกษา ความรู้ การรับรู้ ความถี่ของประสบการณ์น้ำท่วม กิจกรรมการเตรียมความพร้อมของการเกิดน้ำท่วมโดยการมีส่วนร่วมของชุมชน

จากผลการศึกษาดังกล่าว ข้อแนะนำเพื่อที่จะให้เกิดการปรับปรุงพฤติกรรมการเตรียมความพร้อมในกรณีเกิดน้ำท่วมใหญ่อย่างยั่งยืนคือ การสร้างความเข้มแข็งในกิจกรรมการเตรียมความพร้อมในกรณีเกิดน้ำท่วมใหญ่โดยการมีส่วนร่วมของชุมชนเป็นสิ่งจำเป็น โดยชุมชนและองค์กรท้องถิ่นมีบทบาทสำคัญในกิจกรรมดังกล่าว

คำสำคัญ

น้ำท่วม การเตรียมความพร้อมในกรณีภัยพิบัติ พฤติกรรม

Introduction

Flood disaster is the highest number of natural disaster in Southeast Asia and Thailand as well. The loss in lives and livelihood is immense, and the economic effect on a country's development is considerable (1).

The last recent fatal experience of a natural disaster was the Tsunami that hit Asia on December 26, 2004 was one of most terrible disasters in recorded history.

After the Tsunami Early Warning system in the Indian Ocean and South East Asia has been arranged among international meeting (2).

Asia-pacific region is exposed to almost every type of natural disaster. Sixty percent of the major natural disasters reported in the world occur in this region. (3)

Before the Tsunami, Thailand was consider a non-disaster prone country. However, it occurred frequently particularly water related disaster such as flood, urban inundation, tropical storm and drought. For instances, in 2000 flashflood occurred in Haad Yai metropolis of Songkhla Province, in 2001 flashflood occurred in Prad and Petchaboon Province. These created losses in people's lives, property, natural environment and national economy.

Flood is the high frequency disaster in Thailand. Especially southern part of Thailand had 7 floods out of 25 reported nationally from data of 2000 to 2005 (4) and also the south had experience of the Tsunami. As a first experience of Tsunami for people, this experience will affect people's behavior. However, the flood disaster preparedness should be strengthened.

The main objective of current study was to describe flood disaster preparedness (FDP) behavior and factors among heads of households in rural Muang District, Trang Province of Thailand. The specific objectives were:

1) To identify flood disaster preparedness behavior among heads of households

2) To identify socio demographic factors, predisposing factors, reinforcing factors and enabling factors towards FDP behavior among heads of households.

3) To describe FDP behavior by socio-demo graphic factors, predisposing factors, reinforcing factors and enabling factors.

Marerial and Methods

The cross sectional descriptive study was conducted in 12 villages of 2 sub districts in rural Muang District from the 18th to 21st of January 2007. 211 heads of households which were selected by multi-stage sampling were interviewed by Village Health Volunteers (VHV). A structured questionnaire was used to collect data. The questionnaire consists of 5 parts (65 questions) such as Socio-demographic factors part, predisposing factors part, reinforcing factors part, enabling factors part and flood disaster preparedness behavior part. Especially knowledge, perception and behavior part, to determine the each level, bloom's cut-off point (5), Best's group rating criteria (6), median for cut-off point were used respectively.

Pre-testing was conducted for reliability of the questionnaire among 30 heads of households in Na Yam Nua Tambon, rural Muang District, by using Kuder Richardson's 20 for the knowledge and behavior part and Cronbach's Alpha for perception part in which measurement of reliability were as follow; knowledge 0.712, perception 0.764, behavior 0.641.

Data collection was carried out by inter viewers who were hired from local VHVs. Before the interview, orientation was held by

the researcher and coordinator.

The study was analyzed with descriptive statistics for describing individual characteristics of each factor. Inferential statistics such as Chi-square test, Pearson correlation were performed to determine an association between independent variables and dependent variable.

Results

Socio-demographic factors

The general characteristics of heads of households included age, sex, type of family, number in family, occupation, family income, education, religion and type of houses as presented in Table 1. It was revealed that nearly one-thirds (31.1%) of the respondents aged 40 to 49 years and aged 50 to 59 years with a mean age of 49.7 years. Nearly half of the respondents (46.5%) were male. A large majority type of family (81.5%) was nuclear family while 60.6 percent was small family size with an average four members (mean =4). With respect to occupation, almost half of their livelihood was rubber tree planting (49.3%) and 36.0 percent of the respondents were fisherman. The rest were government employees (5.2%) and others (9.5%) respectively. Regarding family income, slightly over half of them (57.3%) were between 5,000 - 10,000 Baht per month. The average monthly family income was 9,680 Baht. Nearly two-thirds (59.2%) had obtained schooling up to primary school level of which 25.2 percent graduated secondary school level. Only 7.1 percent had less than primary school level. In contrast, 8.5 percent had obtained bachelor degree. The result concerning the religion, almost all (97.6%) of the respondents were Buddhist. Only a few (2%) were Muslim and 0.4 percent was Christian. In relation to type of houses, slightly over two-thirds (70.1%) lived in single one story home and 26.1 percent was two stories.

Table 1 Number and Percentage of Respondents by Socio-Demographic Factors

Socio-Demographic Factors	Number (n=211)	Percent
Age group		
≤ 39	37	17.5
40-49	66	31.3
50-59	67	31.8
≥ 60	41	19.4
(Mean=49.7 S.D.=11.12 Min.=19 Max.=75)		
Sex		
Male	98	46.5
Female	113	53.5
Type of family		
Nuclear	172	81.5
Extended	39	18.5
Number of family member		
Small (≤ 4)	128	60.6
Big (≥ 4)	83	39.4

Table 1 Number and Percentage of Respondents by Socio-Demographic Factors (cont.)

Socio-Demographic Factors	Number (n=211)	Percent
Occupation		
Rubber tree planting	104	49.3
Fisherman	76	36.0
Government employee	11	5.2
Others	20	9.5
Income(per month)		
Low (<5,000 Bt)	31	14.7
Moderate (5,000-10,000 Bt)	121	57.3
High(>10,000 Bt) 59 28.0		
(Mean=9,680 S.D.=5,548 Min.=2,500 Max.=35,000)		
Education		
Less than primary	15	7.1
Primary	125	59.2
Lower secondary school	36	17.1
Upper secondary school	17	8.1
High(Bachelor or higher)	18	8.5
Religion		
Buddhism	206	97.6
Muslim	4	2.0
Christian	1	0.4
Type of house		
Single one story	148	70.1
Two stories	55	26.1
Thai style (lifted floor)	8	3.8

Predisposing factors

To examine the respondents' knowledge and their level, the heads of households were asked fourteen questions on knowledge of FDP. The level of knowledge for heads of households was measured as more than one-half good (54.0%), less than one-half was moderate (43.1%) and only 2.9 percent was poor as shown in Table 2. To determine the perception level of heads of households, respondents were requested to reveal their opinion on 16 statements under the category of perception on benefit and barrier of FDP. The perception level of respondents was high and moderate, 42.2 percent and 41.7 percent respectively. Some of respondents had low perception level (16.1%) which presented in Table 2.

Reinforcing Factors

A large majority of the respondents (93.8%) had flood experiences and almost all (99.5%) knew the term Tsunami in 2004. Nearly one-half of them (47.9%) had community-based flood disaster preparedness activities and main activities were sharing information (56.4%) and workshops (28.7%).

Enabling Factors

Most of the respondents had the available information about flood and FDP, 94.8% and 80.6% respectively. The sources were from T.V. (94.0%), radio (61.5%) for flood information and local government (76.5%), and community leaders (62.4%) for FDP. The accessibility of information was fairly good (88.8%). The shelter was available for them (91.9%) in this study area such as temples (50.5%) and relative's houses (50.0%).

Table 2 Percentage of the Respondents by Study factors

Study factors	Number (n=211)	Percent
Predisposing factors		
Knowledge		
Good	114	54.0
Moderate	91	43.1
Poor	6	2.9
Perception		
High	89	42.2
Moderate	88	41.7
Low	34	16.1
Flood experiences		
Yes	198	93.8
No	13	6.2
Freq. of flood experiences (n=173)		
1-3	100	57.8
≥4	73	42.2
(Mean = 3.7 S.D. = 2.4 Min. =1 Max.=15)		
Knowing of Tsunami		
Yes	210	99.5
No	1	0.5
Tsunami experience		
Yes	9	4.3
No	202	95.7
Community activities (n=211)		
Have	101	47.9
Don't have	110	52.1
Enabling factors		
Availability of info. about flood		
Yes	200	94.8
No	11	5.2
Accessibility of info. about FDP		
Yes	151	88.8
No	19	11.2
Availability of shelter (n=211)		
Yes	194	91.9
No	17	8.1

Overall in the FDP behavior, more than one-half of the respondents (55.0%) had a good level of behavior and the rest (45.0%) had a poor level of behavior (Table 3).

Table 3 FDP behavior among Respondents

Behavior	Number (n=211)	Percent
FDP behavior		
Good	116	55.0
Poor	95	45.0

For the association between socio-demo graphic factors and FDP behavior, it was found that there were five variables were significantly associated: sex, number of family members, occupation, income, and education. (Table 4).

Regarding sex, male respondents had higher proportion of good behavior (62.2%) than female respondents (48.7%). 51.3 percent of female respondents had poor behavior compared to only 37.8 percent for male respondents. This had a slight statistical significance with a P-value of 0.048.

The number of family members was grouped into two such as for a small family and a big family. Big families had higher proportion of good behavior (63.9%) and 49.2 percent of small families had good behavior. One-half of the small families (50.8%) had poor behavior compared to only 36.1 percent for big families. There was a moderate statistical significance with a P-value of 0.037.

Concerning occupations in rubber tree planting and fishing, more than half of them had good behavior at 56.0 percent and 54.0 percent respectively. Especially, government employees had a higher proportion (90.9%) of good behavior. The other categories for merchants and other businesses had a poorer behavior level (73.3%). It had a statistical significance with a P-value of 0.014.

According to the result of family income per month, the high income group had a higher proportion of good behavior (66.1%) and only some of them had poorer behavior (33.9%). The moderate income group also had a little higher proportion of good behavior (59.5%) and less than one-half had poor behavior (40.5%). The low income group had a higher proportion of poor behavior (83.9%) and only a few of them had good behavior (16.1%). There was a statistical significance with a P-value of <0.001. About attainment of education, it was found that there was a statistical significance with a P-value of 0.001 as well. The respondents who received a bachelor's degree had a higher proportion of good behavior (88.9%) and only a few had low behavior (11.1%). More than one-half of the primary education level group had poor behavior (53.6%) and good behavior was for less than half (46.4%).

However, there was no association with other socio-demographic factors such as age, type of family, religion and type of house. (Table 4)

Table 4 FDP Behavior by Socio-Demographic Factors

Socio-Demographic Factors	Level of behavior				Chi-square p-value
	Good		Poor		
	No.	(%)	No.	(%)	
Age group					0.905
≤39	22	(59.5)	15	(40.5)	
40-49	37	(56.1)	29	(43.9)	
50-59	35	(52.2)	32	(47.8)	
≥60	22	(53.7)	19	(36.3)	
Sex					0.048*
Male	61	(62.2)	37	(37.8)	
Female	55	(48.7)	58	(51.3)	
Type of family					0.578
Nuclear	93	(54.1)	79	(45.9)	
Extended	23	(59.0)	16	(41.0)	
Number of family member					0.037*
Small	63	(49.2)	65	(50.8)	
Big	53	(63.9)	30	(36.1)	
Occupation					0.014*
Rubber tree planting	61	(56.0)	48	(44.0)	
Fisherman	41	(54.0)	35	(46.0)	
Governmet employee	10	(90.9)	1	(9.1)	
Others	4	(26.7)	11	(73.3)	
Family Income(per month)					0.001**
Low	5	(16.1)	26	(83.9)	
Moderate	72	(59.5)	49	(40.5)	
High	39	(66.1)	20	(33.9)	
Education					0.001**
Less than primary	13	(86.7)	2	(13.3)	
Primary	58	(46.4)	67	(53.6)	
Lower secondary school	21	(58.3)	15	(41.7)	
Upper secondary school	8	(47.1)	9	(52.9)	
Bachelor or higher	16	(88.9)	2	(11.1)	
Religion					0.381[f]
Buddhism	112	(54.4)	94	(45.6)	
Muslim/Christian	4	(80.0)	1	(20.0)	
Type of house					0.309
Single one story	78	(52.7)	70	(47.3)	
Two stories/Thai style	38	(60.3)	25	(39.7)	

[f] Fisher exact test
*P<0.05
**P<0.01

For the association between the level of knowledge and FDP behavior, the Chi-square test found no statistically significant association, whereas Pearson correlation revealed significant association (r = 0.307, P-value< 0.001).

For the association between the level of perception and FDP behavior, there was a statistically significant association with a P-value of 0.042 using chi-square test. The high and moderate perception group had good behavior level, 58.4 percent and 59.1 percent respectively. The low perception group had poor behavior level (64.7%) and only some of the low perception group had a good behavior level (35.3%) as shown in

Table 5 Association between the Level of Knowledge, Perception and Level of FDP Behavior

	Level of behavior				Chi-square p-value
	Good		Poor		
	No.	(%)	No.	(%)	
Level of knowledge					0.928
Good	63	(55.3)	51	(44.7)	
Moderate/Poor	53	(54.6)	44	(45.4)	
Level of perception					0.042*
High	52	(58.4)	37	(41.6)	
Moderate	52	(59.1)	36	(40.9)	
Low	12	(35.3)	22	(64.7)	

*P<0.05

Table 5

The association between experiences of disasters and FDP behavior, there was a statistical significant association between frequency of flood experiences and FDP behavior with P-value <0.001 using Chi-square test. High frequency of flood experiences (at least 4 times) group had good behavior level (82.2%) while low frequency of flood experiences group had poor behavior level (63.0%). For the other variables such as knowing Tsunami and experiences of Tsunami, no association was found using Chi-square test.

The association between involvement in com munity-based FDP activities and FDP behavior was a statistically significant association with a P-value of 0.038 using chi-square test. Those involved in activities had a good behavior level (62.4%).

Regarding availability and accessibility of information, and availability of shelter, the result showed that there were no statistically significant associations using Chi-square test.

Discussion

The result showed that 55 percent of the respondents had good behavior and nearly half of them (45%) had poor behavior. Compared with Takahara's previous study (7) on flood preparedness behavior among household members which had 42 percent good behavior, this study's result was slightly higher. There are three explanations. First even though, both study areas were flood risk provinces in southern Thailand, they were

different provinces. Therefore, people's knowledge and perception level were different, as was behavior level. Secondary, this study area just experienced heavy flooding in 2005, thus people could consider about flood disaster more. People's moderate to high perception led to action. Third, the study area was rural Muang District. People had better family income (median= 8,000) than Takahara's study (median=3,000) (7). So in this study people could afford to prepare goods.

However there was the need to improve their behavior partially. From the results of each item of preparation, to make more efficiency to prepare, emergency bags for keeping goods together should be prepared at each household in addition to preparing food, money and boat are recommended to prepare. Furthermore, an important thing is to maintain their awareness of flood risk at community level. Keeping good behavior level like this time of the study is essential. In other words, it should be considered sustainable.

Conclusion

To conclude, this study revealed that more than half of the respondents (55%) had a good level of FDP behavior with good knowledge. Especially, perception was moderate to high level for almost all respondents. And male heads of households with agricultural occupation, high income, high education, living in large families, having flood experiences frequently, involving community activities tend to have good FDP behavior.

Recommendation

The study found that the level of behavior was fairly good in this area. To maintain good level is important for individuals as well as the community.

Involvement community activities had association with FDP behavior. Making improvement of community activities makes better behavior for the people. Therefore, TAO as local government which has responsibility for community activities can have an important role of improvement for the community. Then finding a more systematic way is helpful and can be efficient. For example, strengthening present activities such as sharing information and workshop might be one key point. Making a list for recommended flood emergency goods(8) and distribute to villagers, identifying risk areas, creating flood risk map and informing the places for shelter are clearly supported by these findings.

Central government is responsible for raising awareness of its importance of FDP and emphasize on strengthening of community-based FDP activities at each community level (9).

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