

# Flood Disaster Experiences and Preparedness of Chronically Ill Patients and Family Caregivers in Thailand\*

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## Abstract

**Purposes:** This article examines experiences of chronically ill patients and family caregivers during flood disaster, how they prepared for the recent flood disaster, and how they will prepare for such disasters in the future.

**Design:** Mixed method research.

**Methods:** This study collected data from 30 chronically ill patients with diabetes and/or hypertension, and 30 family caregivers in two urban communities in Thailand during July 2013 - October 2013. Data were gathered by using demographic and flood preparedness questionnaires. Focus group interviews were conducted with patients and caregivers. Quantitative data were analyzed by using percentage, means, and standard deviation. Qualitative data were analyzed by using content analysis.

**Main findings:** The mean scores of flood preparedness among chronically ill patients (M = 5.40, SD = 4.24) and caregivers (M = 6.56, SD = 4.65) indicated that their preparation was at a low level. Both patients and caregivers experienced physical and psychological distress during the flood disaster. Most of them were concerned with economic issues and household supplies, rather than disease management and health conditions. Six themes emerged from interview included: preparation for natural disaster and illness management; health management; emotional response; identified needs for physical and psychological support; active community participation; and future preparedness for self-management. In addition to self management, the majority of patients and caregivers required more effective resource management from local community leaders to prepare for future flood disaster.

**Conclusion and recommendations:** Participants exhibited a lack of flood disaster preparedness. Informational and psychological support from nurses is needed for better preparation in the future. Essentially, individual and communities are encouraged to strengthen their capacities for disaster management and develop strategies for effective preparedness.

**Keywords:** flood disaster, preparedness, chronically ill patients, family caregivers

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# ประสบการณ์ และการเตรียมความพร้อมในภาวะภัยพิบัติน้ำท่วมของผู้ป่วยเรื้อรังและญาติผู้ดูแลในประเทศไทย\*

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## บทคัดย่อ

**วัตถุประสงค์:** ศึกษาประสบการณ์ผู้ป่วยเรื้อรังและญาติผู้ดูแลระหว่างภาวะภัยพิบัติน้ำท่วม การเตรียมความพร้อมในภาวะน้ำท่วมที่ผ่านมา และการเตรียมความพร้อมในภาวะภัยพิบัติน้ำท่วมในอนาคต

**รูปแบบการวิจัย:** การวิจัยด้วยวิธีผสมผสานเชิงปริมาณและเชิงคุณภาพ

**วิธีดำเนินการวิจัย:** กลุ่มตัวอย่างเป็นผู้ป่วยเรื้อรังที่เป็นโรคเบาหวานหรือความดันโลหิตสูงจำนวน 30 คน และ ญาติผู้ดูแล 30 คน อาศัยใน 2 ชุมชนเมืองในประเทศไทย เก็บข้อมูลระหว่างเดือนกรกฎาคม ถึง ตุลาคม พ.ศ. 2556 เก็บข้อมูลโดยใช้แบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามการเตรียมความพร้อมในภาวะภัยพิบัติน้ำท่วม และสัมภาษณ์แบบกลุ่ม ข้อมูลเชิงปริมาณวิเคราะห์โดยใช้สถิติร้อยละ ค่าเฉลี่ย และค่าเบี่ยงเบนมาตรฐาน ข้อมูลเชิงคุณภาพวิเคราะห์โดยการวิเคราะห์เนื้อหา

**ผลการวิจัย:** คะแนนเฉลี่ยการเตรียมความพร้อมในภาวะภัยพิบัติน้ำท่วมของผู้ป่วยเรื้อรัง ( $M = 5.40$ ,  $SD = 4.24$ ) และญาติผู้ดูแล ( $M = 6.56$ ,  $SD = 4.65$ ) บ่งชี้ว่ามีการเตรียมความพร้อมอยู่ในระดับต่ำ ทั้งผู้ป่วยเรื้อรังและญาติผู้ดูแลมีประสบการณ์ลำบากทั้งด้านร่างกายและจิตใจระหว่างน้ำท่วม ส่วนใหญ่กังวลเกี่ยวกับปัญหาเศรษฐกิจและบ้านพักอาศัย มากกว่าการจัดการโรคและภาวะสุขภาพ หกประเด็นที่ปรากฏจากการสัมภาษณ์ได้แก่ การเตรียมสำหรับภัยธรรมชาติและการจัดการการเจ็บป่วย การจัดการสุขภาพ การตอบสนองทางอารมณ์ ความต้องการการช่วยเหลือระดับรองทางด้านร่างกายและจิตใจ การมีส่วนร่วมของชุมชน และการเตรียมความพร้อมในอนาคตสำหรับการจัดการตนเอง นอกจากนี้ผู้ป่วยและญาติส่วนใหญ่ต้องการให้ผู้นำชุมชนในท้องถิ่นมีการจัดการแหล่งประโยชน์ให้มีประสิทธิภาพมากขึ้น เพื่อเตรียมความพร้อมสำหรับภัยพิบัติน้ำท่วมในอนาคต

**สรุปและข้อเสนอแนะ:** ผู้ป่วยและญาติยังขาดการเตรียมความพร้อมสำหรับภัยพิบัติน้ำท่วม ทั้งนี้ การสนับสนุนด้านข้อมูลและการช่วยเหลือระดับรองด้านจิตใจจากพยาบาลเป็นสิ่งจำเป็น เพื่อการเตรียมพร้อมที่ดีขึ้นในอนาคต โดยเฉพาะการส่งเสริมให้ผู้ป่วยและญาติทุกคนรวมทั้งชุมชนสร้างความเข้มแข็งในการจัดการภาวะภัยพิบัติ และพัฒนาวิธีการเตรียมความพร้อมอย่างมีประสิทธิภาพ

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## Background and Significance

Flood disaster impacts chronically ill patients, physically and psychologically. Preparation for flood disaster is important for these patients and caregivers. Management of chronically ill patients during natural disasters has been identified as an important health issue in a global context. According to the World Health Organization<sup>1</sup> patients need to be prepared for appropriate management during natural disaster, such as earth quakes, fire, or floods to reduce negative health outcomes. In relation to floods, big or small, they can have devastating effects on people and create harm to physical and psychological health. Effective preparedness for flood crisis is crucial and could contribute to readiness for flood management. The Centers for Disease Control and Prevention<sup>2</sup> asserted that flood disaster preparedness includes both preparing emergency supplies as needed and preparing to evacuate. People, both healthy and ill, must have the capability and resources to continue to sustain essential functions without being overwhelmed by the demands placed on them. These include disaster supplies kits, medical items/needs, dietary needs and an evacuation plan.<sup>2-4</sup> However, a previous study revealed that there were medically ill populations that got worse because of interruption of medication during disaster.<sup>5,6</sup> Several studies indicated that during disaster and post disaster, chronically ill patients needed greater support for illness management from health authorities, such as food, health services, medical supplies, or even shelters.<sup>7,8</sup> Some prior studies<sup>9,10</sup> have shown delayed increases in mortality after disasters, with lack of access to routine health care being a leading cause of such death.

Thailand ranks as the seventh most flood prone country in the world.<sup>11</sup> The 2011 Thai floods resulted in loss of lives and extensive damage causing more than 800 deaths and 9.5 million victims. With a total of US\$ 40

billion of damage, it was the most expensive natural disaster in Thailand's history.<sup>12</sup> The floods lasted for over 3 months, and thus had a great impact on the health of Thai people, especially those suffering chronic illnesses, a statistic that is increasing in Thailand.<sup>13</sup>

Generally, the chronically ill patients, especially those with diabetes and hypertension, are more likely to be aged people, dependent and mostly require ongoing medical treatment.<sup>14</sup> As a result, disaster preparedness is more complex for these patients as they often required specific planning to address unique needs. However, many studies found that this group of patients were inadequately prepared for the disasters<sup>4,14-20</sup> therefore they often need help from family caregivers. Family caregivers play an important role in supporting patients to prepare for disaster including essential supplies used to meet patients' needs and helping them handle stress and trauma.<sup>21</sup> The guideline for disaster preparedness also suggests that individual and family should help together to prepare for disaster experiences.<sup>3</sup> However, there are very few studies on how chronically ill patients and caregivers live and prepare for flood disaster.<sup>8</sup> Specifically in Thailand, there is limited research how chronically ill patients and caregivers prepare and manage with illness during flood disaster, especially in the urban area. The findings from the study will be useful for gaining an understanding of how this group of patients and caregivers, faced with the unexpected disaster, managed to prepare themselves during this difficult time and with scarce resources.

## Objectives

1. To examine the flood disaster experiences and preparedness of chronically ill patients and their caregivers.

2. To identify the future preparedness for flood disaster of chronically ill patients and their caregivers.

## **Methodology**

### **Research design**

A descriptive mixed method research study was conducted during July 2013 - October 2013.

### **Population and sample**

Participants were 30 chronically ill patients with diabetes and/or hypertension and 30 family caregivers who provided care for these patients during the flood events. The number of samples in this study was considered sufficient for the central limit theorem to apply. Moreover, the sample size was based on the saturation of data for qualitative findings. Inclusion criteria for the chronically ill patients were those who had been diagnosed with the diabetes and/or hypertension, age 18 years old and above, male and female, able to communicate in Thai, had no visual and/ or hearing deficits, and stayed in the community area of flood disaster in 2014. The inclusion criteria for the family caregivers were those who stayed with the patients during the flood disaster in 2014, age 18 years old and above, male and female, able to communicate in Thai, and had no visual and/ or hearing deficit. All participants were cognitively and physically able to participate in the study. They were recruited through two communities in Metropolitan Bangkok where floods occurred for longer than three months. After advertising the project through a poster, the heads of each community aided in the recruitment process before gaining the informed consent.

### **Research instruments**

Questionnaires and interview guide were used to collect data in this study. Demographic questionnaires and the flood preparedness questionnaires were used to collect data.

Demographic questionnaires for patient and family caregiver were developed by the researcher. For patients, the questionnaire consisted of age, sex, education, occupation,

income, diagnosis, length of time since diagnosis, status in the family, treatment, duration of living with flood, and perceived impact of flood disaster. For family caregivers, the questionnaire was composed of age, sex, education, occupation, relationship with the patient, working hour and duration of caregiving, status in the family, income, duration of living with flood, and perceived impact of flood disaster.

The flood preparedness questionnaire was developed by the researcher based on the CDC literature for flood disaster preparedness for chronic illness. The questionnaire was composed of 16 items. This questionnaire was used for both patients and family caregivers. The instruction indicated that each patient or family caregiver answer the questionnaire regarding their experiences for illness management, as a patient or family caregiver, during flood disaster. Scores range from 0 to 16. The higher the score, the higher the preparedness. Examples of items in the questionnaire included 'Supply essential medications that the patient takes regularly for 1-2 weeks at least' and 'Make a plan of care for the patient in emergency situations.' The questionnaire was reviewed by three experts for content validity. The Cronbach's alpha reliability of the instrument was .81 for patients, and .90 for caregivers.

In relation to qualitative data, a semi-structured interview guide was used to collect information from both patients and caregivers. A digital tape recorder was used to gather information from interviews. There were five main questions to explore participants' experiences related to disaster and flood preparedness. For example: What were your flood experiences, preparation, and illness management during the last flood disaster? How will you prepare for flood disaster in the future?

### **Procedures**

Prior to data collection, the researcher

gain an ethic approval from the Institutional Review Board, Faculty of Nursing, Mahidol University. After getting the approval (COA No. IRB-NS2013/164.0403), permission was obtained from heads of two communities in this study for data collection. Using a poster to advertise about the project, participants were recruited before gaining the informed consent. The participants were informed about their risk and benefits of participating in the study, and their rights to withdraw from the study at any time. All participants were ensured of the confidentiality of data and their voluntary participation.

The data collection process was described below:

1. The researchers collected personal data of the participants by using a demographic questionnaire and flood preparedness questionnaire separately for patients and families.

2. Following completing the questionnaires, the qualitative data were collected through focus group interviews with patients and caregivers separately, by using a digital tape recorder to collect the information, lasting 60-90 minutes.

The data analysis was conducted as follows:

1. The quantitative data were analyzed by using percentage, means, and standard deviation.

2. Interviews were transcribed verbatim and analyzed by using content analysis.<sup>22</sup> The qualitative data analysis included reading all the transcripts, coding the data, grouping similar codes into categories, and categories were finally formed into themes to illustrate the findings.

### **Findings**

The majority of the patients were female (73.3%) aged over 60 years old (83.4%). Their highest education ranged from elementary to middle school (93.4%), while most of them were unemployed (70%). All of the patients had universal health coverage. Fifty percent of them had both diabetes and hypertension, whereas 43.3 % were diagnosed with only hypertension and 6.7 % had only diabetes. The majority of family caregivers were female (90%), aged under 60 years old (76.7%), and being employed (56.7%). Duration of stay in the flood areas ranged from 60 to 120 days. The perceived severity of impact from flood disaster of chronically ill patients and their family caregivers were similar at a moderate level (mean score = 2.7 and 2.8 respectively).

**Table 1** Mean and SD score of the Preparedness for Disaster of the patients and family caregivers in each item and total

Items of Preparedness for Disaster	Patients (N = 30)		Caregivers (N = 30)	
	No N(%)	Yes N(%)	No N(%)	Yes N(%)
1. Having medical alert identification with the patient	23(76.7)	7(23.3)	23(76.7)	7(23.3)
2. Having a name card and list of patient's diseases with the patient	23(76.7)	7(23.3)	21(70)	9(30)
3. Having a record of drugs and doses that the patient uses (both pills and injections)	24(80)	6(20)	19(63.3)	11(36.7)
4. Preserve essential pills that the patient takes regularly for at least 1-2 weeks	9(30)	21(70)	8(26.7)	22(73.3)
5. Prepare equipment or walking aids necessary for the patient	23(76.7)	7(23.3)	19(63.3)	11(36.7)
6. Practice how to best call others for help or transfer the patient	24(80)	6(20)	24(80)	6(20)
7. Prepare a copy of health information for the patient	22(73.3)	8(26.7)	23(76.7)	7(23.3)
8. Prepare clear and concise note about essential care for the patient	28(93.3)	2(6.7)	27(90)	3(10)
9. Prepare health care cover card and hospital identification card	7(23.3)	23(76.7)	4(13.3)	26(86.7)
10. Ask the doctor/ nurse about how to self-manage in case the patient could not go to get medications or visit the hospital	24(80)	6(20)	20(66.7)	10(33.3)
11. Seek other health care settings for emergency services	18(60)	12(40)	14(46.7)	16(53.3)
12. Set up a plan to care for the patient if any emergency occurs	21(70)	9(30)	16(53.3)	14(46.7)
13. Plan how to monitor symptoms of the patients	23(76.7)	7(23.3)	19(63.3)	11(36.7)
14. Prepare lists of all treatment required by the patient in advance	22(73.3)	8(26.7)	23(76.7)	7(23.3)
15. Preserve appropriate foods for patient's illness for 5-7 days	16(53.3)	14(46.7)	13(43.3)	17(56.7)
16. Prepare important belongings in the same spot for a convenient pick up in emergency situations	11(36.7)	19(63.3)	10(33.3)	20(66.7)
<b>Total score (0-16)</b>	<b>Range 0-15</b>		<b>Range 1-16</b>	
<b>Mean (SD)</b>	<b>5.40(4.24)</b>		<b>6.56(4.65)</b>	

As shown in Table 1, the three highest scores of disaster preparedness for patients and family caregivers included preparing health care cover card and hospital identification card, preserving essential pills, and preparing important belongings for move. The findings showed that 70 % of the patients and 73.3 % of the caregivers preserved essential medications that the patients took on a regular basis for at least 1-2 weeks. Most patients (76.7%) and family caregivers (86.7%), as part of their preparation, ensured that they had their health care cover card and hospital identification card for emergency circumstances. Finally, 63.3% of patients and 66.7% of family caregivers focused on organizing their belongings ready for move in emergency situations.

On the contrary, the three lowest scores of the disaster preparedness for patients and family caregivers were preparing clear and concise note about essential care for the patients, practicing how to best call others for help or transfer the patients, and asking doctors or nurses how to self manage at home. Only 6.7% of the patients and 10% of family caregivers had a clear memo of essential care related to the patients. Little number of patients (20%) and family caregivers (20%) practiced how to call for help the patients in crisis situations. Similarly, not many patients (20%) and family caregivers (33.3%) made a query to doctors or nurses regarding self management for patients during disaster. Overall, the total mean scores of preparedness for disaster for both patients and family caregivers were equal to 5.40 and 6.56 respectively, indicating that their disaster preparation was at a low level.

Interviewed data derived from the experiences and preparedness for flood disasters among patients and caregivers were divided into six themes: Preparation for natural disaster and illness management; Health management during the natural

disaster; Emotional response to the natural disaster; Identified needs for physical and psychological support; Active community participation; and Future preparedness for self- management. These themes were described as follows.

### **Theme 1: Preparation for natural disaster and illness management**

Familiarity with and frequent exposure to natural disasters such as flooding may serve as barriers to preparation for illness management. Most of the participants, both patients and caregivers, reported that they underestimated the severity of the last flood situations. They thought that it would come gradually and then disappear. As a result, they did not adequately prepare for themselves and families. When asked about their preparation during the floods occurrence, the majority reported their immediate priority was to protect or save their belongings. As one patient and her family described “This is something fast and unexpected. We have no time to prepare for anything, just save our belongings”.

### **Theme 2: Health management during the natural disaster**

When faced with a natural disaster situation, there are many competing priorities facing patients with a chronic illness. When asked about the management of their illness during the natural disaster, responses suggested that illness management became less of a priority when these participants encountered the disaster. Indeed, study participants reported that they were less concerned about their health given the other challenges that they were facing. As one patient who had hypertension revealed, “At that time, I only think of how to place all valuables in a safe place”. Many participants admitted that they did not know how they were supposed to prepare for managing their health in case of a

natural disaster or other emergency situation. Many patients explained that “we do not know what to do about our illness, we only have to manage with our living environment”.

### **Theme 3: Emotional response to the natural disaster**

The stress associated with the flooding experiences and needs associated with safety served as key emotional barriers to health management. As one patient indicated, “I felt very stressful looking at the rising level of the flood”. Some family members reported that “When the floods come, the snakes are around. We feel scared”. Although the majority felt frustrated about this disaster, a few stated that they accepted that the floods always come in their community. As one patient highlighted, “We could only prepare our best, including medication, money, and spirit to fight the flood”. They said that people needed to accept that the floods are part of the unpleasant event in life, and people have to learn to live with it”. This demonstrated a coping response among those who had prior experiences about the flood disaster. Nevertheless, all participants agreed that they wanted that the flood to get over soon, so that they would feel more secured and safe.

### **Theme 4: Identified needs for physical and psychological support**

Overall, the needs of patients and family members in both communities under study were similar. They expressed their needs for physical and psychological support to ensure safety and security in lives. As one patient mentioned, “I had chest discomfort during this disaster. I was struggled to call for neighbor to escort me to the hospital”. Some who needed insulin therapy had to rely on family caregivers to get insulin from other community centers. Some requiring special foods, such as diabetic or low salt diet, appeared to get mainly rice and salty foods.

In relation to psychological issues, many patients remarked, “We really feel overwhelmed, burned out; and frustrated. We could not go to sleep”.

With respect to family caregivers, many pointed out that they only wanted themselves and their families to be in a safe and healthy place. Some had moved patients to live at a temporary shelter, such as school or temple for security. Many suggested that there should be more sanitary appliances and toilet nearby if people needed them.

### **Theme 5: Active community participation**

All participants acknowledged that strong and active community participation is a key for effective management with the flood disasters, in the past and the future. Many patients and caregivers stated that “We were lucky to get help from neighbors and the community leader during the latest flood disaster. The neighbors shared foods and drinks, while the community leader regularly announced about the flood situations and where to go get foods, drinks, and household drugs”. A patient emphasized that “The community leader made an emergency call for me when I had chest pain, otherwise I would not survive. He also prepared a wheel chair and stretcher for transfer the ill people. He encouraged people in our community help ourselves first, before asking others”. The findings demonstrate that active involvement of community in flood disaster management could contribute to an integrated and sustainable disaster management in the future.

### **Theme 6: Future preparedness for self-management**

Study participants made several recommendations for how public health officials can help them to prepare for and respond to future natural disasters. When asked how these patients and family members

would prepare for the next flood disasters, the majority had a similar response that they wanted more help from the responsible organizations. As one remarked, "It will be great if we could get support from responsible personnel to relieve our stress and reduce our risks. We need so many things...more mobile medical services, toilet, specific foods and drugs for patients, and shelters". Only a few stated that "We would help ourselves first. We could not wait for help from others. We have to stand on our feet".

### Discussion

The quantitative results were congruent with the previous studies.<sup>4,14-19</sup> Most of the chronically ill patients in this study had a lack of preparation for disaster, especially in relation to their illness management. From Table 1, the figures of disaster preparedness among Thai chronically ill patients and their family caregivers were mostly similar. They paid much attention to protecting their personal belongings, with less emphasis on illness management, such as keeping a record of health information, health needs, and treatment required, that might be individualized or culture specific. However, when comparing some aspects of disaster preparedness, the data revealed that the patients were less prepared for having a care plan for emergency situation or asking the doctor/ nurse how to self manage when being unable to get medication than their family caregivers. This may be due to the fact that most patients in this study were more than 60 years of age (83.4 %) and had elementary education (86.7 %), leading to family caregivers to prepare for illness management for them. Aldrich and Benson<sup>14</sup> stated that elderly people tended to be dependent and thus often relied on their families to assist with activities daily living as well as medical treatment.

The qualitative results in this study were

also similar to the previous literature in Thailand<sup>8</sup> and overseas.<sup>18</sup> This study demonstrated that a flood disaster created a big impact on the health and lifestyles of the people. It affected their physical health and daily activities or work. Moreover, the floods caused anxiety, worry, frustration, and stress to them.<sup>23,24</sup> The study of Mason and others<sup>25</sup> showed that individual who had been exposed to a flood disaster had anxiety (24.5%) and depression (35.1%). Otto and colleagues<sup>26</sup> noted that such expressions of anxiety and stress were common experiences among flood victims. As the participants were chronically ill patients with DM and/or HT, management with physical and psychological issues deemed crucial as they were concerned about negative health outcomes, such as uncontrolled blood sugar or blood pressure and other health problems.

In this study, patients and families had prepared for flood disasters at a low level. Their most preparedness included ensuring adequate medications, health care cards, significant valuables, and food supplies for 5-7 days. For medication, the findings are consistent with the study of Kang<sup>5</sup> who pointed out that the participant with multiple chronic diseases were generally more likely to have a three day supplies of medications in comparison with their healthier counterpart. However, the participants in this study had to live in the flood areas for over two months, a week's supply of medication might not be adequate if they were unable to access health care personnel or a drug store. As the participants indicated, they would prefer having a mobile health care service to provide care near by the flood areas to ensure their access for necessary health care services.

Moreover, both patients and families demonstrated that they were inadequately prepared with information about illness, drug lists, allergies, transfer methods, copies of information about patient's treatment and

follow up, and how to monitor signs and symptoms for early detection of crisis relating to illness. Essentially, people need to prepare for disaster by keeping vital records and documents in the emergency kit, such as copies of prescriptions, a supply of all medications, as well as planning how to communicate, get information and deal with medical emergencies.<sup>4</sup>

In relation to assistance received, the findings showed that the participants mainly receive only ordinary food supply, such as fried rice or instant noodle that contain high carbohydrate levels or high salt content. This was consistent with the findings in a previous study that most of the foods following natural disasters were heavily carbohydrate-loaded.<sup>17,28</sup> However, CDC<sup>2</sup> suggests that people should stock up on foods that meet their nutritional requirements. Patients with diabetes and hypertension require low sugar and/or low salt diet to prevent disease exacerbations.

Many participants in this study inadequately prepared for disaster especially health and illness management. Essentially, education and support programs are the key to disaster preparedness. The literature points out that there should be education before, during, and after disaster to inform the public of available services.<sup>4,28</sup> As this study involved diabetic and hypertensive patients, it is a critical time that health care team should provide knowledge about how patients prepare for natural disaster. Mori and colleagues<sup>28</sup> suggested that the disaster planning programs which include a practice to prepare an emergency kit, medical alert identification, copies of their health information should be more emphasized. Patients and families must prepare their disease-specific diet, while health authorities need to provide low-sodium, low-sugar food for the patients with diabetes and/or hypertension. Finally, physical or emotional

stress needs to be mediated so as to decrease health risks during and after disaster.<sup>26,29</sup>

With respect to future preparation for flood disasters, the findings indicated that the majority tended to rely on community assistance. Health care teams need to encourage patients and families to ensure that they are well prepared for flood disasters. As CDC<sup>2</sup> has suggested, everybody needs to prepare themselves at all times, as flood disasters could happen any time. Future studies should investigate why vulnerable groups do not have complete flood disaster preparedness, particularly in areas prone to flooding.

#### **Limitations**

There is limited generalizability due to the small sample size and only one geographical location in this study. Further research should be conducted with larger sample size and multiple locations to enhance the findings.

#### **Conclusion and recommendations**

This research study reports experiences of chronically ill patients and caregivers in Thailand during flood disasters. Issues related to how they prepared and managed during the flood disasters, and future preparedness for these natural disasters were discussed to seek better understandings about their previous flood experiences and preparedness for this disaster. This information may be used to develop strategies for creating an atmosphere of safety and security during the flood disasters, along with their desired systems and practices to reduce their risks or injury. To achieve this, every country is encouraged to strengthen their capacities for disaster management incorporating strategies for effective preparedness, response and recovery. As revealed, disaster victims in many countries including Thailand require cooperation among themselves and all stakeholders to better prepare for natural disaster in the future.

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