

HEALTH PROBLEMS AMONG THAI TREKKERS IN THAILAND: A PROSPECTIVE STUDY

Nujareenart Kuhakasemsin ¹, Watcharapong Piyaphanee ², Parichat Salee ³, Chayasin Mansanguan ², Chatporn Kittittrakul ², Teera Kusolsuk ⁴, Udomsak Silachamroon ², Wattana Leowattana ², Pornthep Chanthavanich ⁵

¹ Hospital for Tropical Diseases, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand,

² Department of Clinical Tropical Medicine, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand,

³ Department of Internal Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand,

⁴ Department of Helminthology, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand,

⁵ Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand

ABSTRACT

A trekker is a kind of traveler who may face a high risk of injury and illness while trekking. The numbers of Thai travelers to all national parks have been increasing year by year. This study aimed to determine the incidence of health problems among Thai trekkers, specifically. Phukradueng National Park was selected to represent trekking for this study, as it is one of the most popular mountains for trekking in Thailand. Questionnaires were collected at the national park site after study participants finished their trips. Follow-up was done on day 14(+5) after the trip regarding their health problems. 342 Thai travelers participated in this study. 51.5% were male and the median age was 27. The average trip duration was 2.76 days. 90.9% experienced health problems within the last day of the trip. Common health problems experienced were muscle soreness, found in 83.3% of participants, followed by runny nose (21.6%), and abdominal bloating (9.6%). 48.5% of all participants were first-time trekkers. Overall, 96.8% prepared themselves for this particular trek. The median preparation time was 5 days. 272 of the 342 participants (79.5%) were followed up for study information. 19 participants reported additional health problems after returning from this particular trek; most had a URI symptoms. The average duration of muscle soreness was 2.88 days. 27.7% of sick travelers needed some form of treatment, and of these, 10 (11.5%) needed to seek a doctor. Females had a higher incidence of injury than males. Common trekking-related problems were muscle soreness, which was mostly mild and self-limiting. Appropriate preparation can prevent injury and illness.

Keywords: Health Problems, Trekker, Thailand

INTRODUCTION

Due to the current influence of social media and social trends, people now share their views

Correspondence: Nujareenart Kuhakasemsin
Hospital for Tropical Diseases, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand, 420/6 Ratchawithi Road, Ratchathewi, Bangkok 10400, Thailand

Phone: +66 (0) 2-306-9100 ext 3034
or +66 (0) 2-306-9145

Fax: +66 (0) 2-306-9145

Email: nujareenart@thaitravelclinic.com

and reviews of trekking routes on the internet. National parks have also become better organized as the trend of trekking among Thais is increasing.

People can trek in Thailand at national parks and wildlife sanctuaries, which include mountainous areas, waterfalls, and islands. Thai visitor numbers to Thai national parks have been increasing every year, from 8,630,552 in 2012 to 11,717,144 in 2016. (Department of National Parks, Wildlife and Plant Conservation, 2017). Phukradueng National Park is located in the north-eastern part of Thailand. The trekking path at the park is 5,500 meters long, from the foothills to the top, which is 1,200 meters above sea level.

Trekking activities at the park include sightseeing, waterfall visits and bicycling. The number of trekkers at Phukradueng National Park increased from 57,580 in 2012 to 70,408 in 2016, an increase of 22% (Department of National Parks, Wildlife and Plant Conservation, 2017).

Many health problems can occur during a trek due to the risks involved. These health problems can be divided into 2 main types: injury, and medical illness. (Forrester and Holstege 2009, Hamonko, *et al*, 2011, Twombly and Schussman, 1995). Medical care while trekking is largely inaccessible. Therefore, preparation and prevention should be ensured before the trek (Auerbach, 2007). Differences in susceptibility to injury and illness vary by area, season, and environment (Forrester and Holstege 2009, Heggie and Heggie, 2009 and Bently, *et al*, 2008). Injury can be prevented by reducing the number of accidents. During a trek, medical illness and disease can occur when exposed to the environment or infectious agents, such as diarrhea and insect bites, which may exacerbate previous medical conditions, such as asthma (Boulware, 2004, Golan *et al*, 2002).

In Thailand, few data on the incidence of injury and illness among Thai trekkers currently exist. This study will help determine the incidence of injury and illness specifically among Thai trekkers, and how Thai trekkers prepare themselves for their trips.

MATERIALS AND METHODS

This was a prospective study among Thai trekkers who trekked the mountain at Phukradueng National Park. The investigator team invited all trekkers who had finished trekking at the study site to participate in the study. Eligible participants were all Thai trekkers aged >13 years who had finished their trip at Phukradueng National Park. Porters, national park staff, traders, and one-day trekkers, were excluded. All participants signed a consent form and completed a 5-page questionnaire divided into 4 parts: demographic data, preparations, risk behaviors and health problems. For participants

between the ages of 13 and 18 years, the participant and a guardian signed the consent form. The investigator team gave participants some snacks and drinking water in return for their participation. In this study, the trekkers were enrolled during a long weekend or public holiday from December 2016 until completion of data collection; December is the most visited month by the trekkers (data from Department of National Parks, Wildlife and Plant Conservation, 2017).

On day 14 (+5), the investigator team contacted participants via telephone interviews, LINE chat or through e-mail. Participants were asked whether they experienced any health problems after trekking and if they received treatment. All questionnaires were coded numerically and all data were recorded into a personal computer. Analysis was done through software. It is assumed that 80% of Thai trekkers would have some kind of health problem during their trip. Given a confidence interval of 95%, the sample size was calculated at 245. The study aimed to collect data from at least 320 trekkers as the average follow up loss is 30%.

RESULTS

Between 4th and 5th of December 2016, 422 Thai trekkers were invited to participate in the study. Eleven trekkers were excluded because 10 trekkers did not endorse the informed consent form and 1 trekker was not Thai. Sixty-nine (13.5%) trekkers refused to participate in the study, resulting in only 342 participants from Phukradueng National Park being enrolled. Male and female participants were equal in number. The median age was 27 years (range 13-59 years) and 48.5% of all participants had no prior trekking experience. 6.4% of all participants had at least one underlying disease. The most common underlying diseases were asthma (2%) and allergic rhinitis (2%). The average trek duration was 2.76 days (range 2-4). Characteristic data for the participants are shown in Table 1.

As shown in Table 2, 96.8% of study

participants prepared themselves physically and/or with information before the trek. 51.2% walked, 38% ran, while 13.5% went to the gym to prepare themselves. 53.8% of all participants prepared by searching the internet or reading books, and 38.9% obtained information from other people. The median preparation time was 5 days (range 0-730 days). 98%, 75.1%, and 20.8%, respectively, carried equipment for cold weather, sunlight or rain protection. 71.3% carried emergency drugs and 48.5% brought first-aid kits.

Table 3 shows reported injuries from the first questionnaire collected at Phukradueng National Park. 297 of 342 participants reported some form of injury during the study. The most common injury was muscle soreness (83.3%), followed by cramps (17.8%) and blisters (9.9%). The lower

Table 1 Demographic data of participants

Demographic data (N = 342)	n (%)
Gender	
Male	176 (51.5)
Female	166 (48.5)
Age	
Median (years)	27 (range 13-59)
Less than 21	48 (14)
21-30	196 (57.3)
31-40	71 (20.8)
41-50	20 (5.8)
51-60	7 (2)
More than 60	0 (0)
Av. Length of stay (days)	2.76 (range 2-4)
With underlying disease	
Any	22 (6.4)
DM	2 (0.6)
HT	6 (1.8)
Asthma	7 (2)
Heart	0 (0)
Allergic rhinitis	7 (2)
Others	5 (1.5)
First time	166 (48.5)

extremities were the most commonly affected parts of the body, with twisted ankles (24%) and falls (18.4%).

Table 4 shows reported illnesses from the first questionnaire collected at Phukradueng National Park. The most commonly reported illness was respiratory tract symptoms; runny nose (21.6%) was the most reported symptom for the respiratory tract, followed by nasal congestion (11.1%), and cough (9.9%). Bloating was the most reported symptom for the gastrointestinal tract (9.6%).

Table 2 Pre-travel health preparation among trekkers

Preparation (N = 342)	n (%)
Any preparation	331 (96.8)
Physical preparation	
Walking	175 (51.2)
Running	130 (38)
Cycling	36 (10.5)
Fitness	46 (13.5)
Others	17 (5)
Information preparation	
Doctor consultation	0 (0)
Book/Internet	184 (53.8)
Leader	8 (2.3)
Friend	133 (38.9)
Others	1 (0.3)
Preparation time	
Median (days)	5
Range (days)	0-730
Rain protection equipment	71 (20.8)
Sunlight protection equipment	257 (75.1)
Cold protection equipment	335 (98)
Prepare first-aid kit	166 (48.5)
Prepare emergency drug	244 (71.3)
Carry flashlight	269 (78.7)

272 of 342 participants were followed up within 14-19 days. 19 participants reported additional health problems after their return. 7 had URI symptoms, 3 had fever and 2 had GI symptoms. The average duration of muscle soreness was 2.88 days. 27.7% of all sick travelers needed some form of treatment. Most bought over-the-counter medications or topical creams. 10 needed to visit a hospital, however, no-one was admitted. The corresponding data are shown in Table 5.

Table 6 shows the percentage of injuries. There was no statistically significant relation between experience or physical preparedness and injury. Gender was significantly statistically related to injury. There was no relation between experience and gender with physical preparedness.

DISCUSSION

To our knowledge, this was the first prospective study that focused on health problems among Thai trekkers. Of the 342 trekkers who participated in the study, most were healthy young adults who trekked

Table 3 Injury during the trip

Injury (N = 342)	n (%)
Symptoms	
Muscle soreness	285 (83.3)
Cramp	61 (17.8)
Blister	34 (9.9)
Abrasion	27 (7.9)
Contusion	25 (7.3)
Torn nail	9 (2.6)
Laceration	1 (0.3)
Part of body	
Lower Extremities	289 (84.5)
Upper Extremities	47 (13.7)
Trunk	44 (12.9)
Head/Neck	26 (7.6)
Event	
Twisted ankle	82 (24)
Slip and fall	63 (18.4)

for a few days on average and prepared themselves beforehand. Overall, 91.8% of participants reported experiencing some health problems during their

Table 4 Illness during the trip

Illness (N = 342)	n (%)
Respiratory tract	
Runny nose	74 (21.6)
Nasal congestion	38 (11.1)
Cough	34 (9.9)
Gastrointestinal tract	
Bloating	33 (9.6)
Abdominal pain	14 (4.1)
Nausea	12 (3.5)
Diarrhea	11 (3.2)
Skin	
Rash	23 (6.7)
Burn	20 (5.8)
Urticaria	3 (0.9)
Fever	28 (8.2)
Neurological symptoms	
Headache	30 (8.8)
Dizziness	23 (6.7)
Syncope	9 (2.6)
Genitourinary tract	
Pelvic pain	8 (2.4)
Dysuria	3 (0.9)

Table 5 Treatment until follow-up day

Treatment (N=314)	n (%)
Any treatment	87 (27.7)
Over-the-counter	
Oral medication	56 (17.8)
Topical cream	27 (8.5)
Visit hospital	
Out-patient department (OPD)	10 (3.2)
Need hospitalization	0 (0)

Table 6 Percentage of injuries and physical preparedness

	Injury	<i>p</i> -value	Physical preparedness	<i>p</i> -value
Experience				
New trekker	148/166 (89.2%)	0.21	137/166 (82.5%)	0.83
Experienced trekker	148/175 (84.6%)		146/175 (83.4%)	
Physically prepared				
Prepared	246/284 (86.6%)	0.79		
Not prepared	51/58 (87.9%)			
Gender				
Male	140/176 (79.5%)	<0.01	152/176 (86.3%)	0.09
Female	157/166 (94.6%)		132/166 (79.5%)	

trek and within 19 days after the trip had ended. The most commonly reported health problem was muscle soreness, with an average duration of 2.88 days. This finding was similar to comparable studies done in the United States (Forrester and Holstege 2009, Hamonko, *et al*, 2011). Approximately two-thirds of all sick travelers did not get treatment of any kind, while the rest underwent self-treatment, potentially indicating that most health problems were mild and self-limiting, mainly due to the age and overall health of the trekkers, as well as the preparations made for the short trek.

Most of the Thai trekkers did prepare themselves before trekking. Most of them carried first-aid kits, emergency medications, flashlights, equipment for preventing cold and sunlight. Surprisingly, only one-fifth of all trekkers carried equipment to protect them from the rain. Phukradueng National Park is prone to rain at any time, so carrying rain protection is always recommended while trekking in this area.

This study found that experience did not affect the incidence of injury among Thai trekkers. Experience also was not related to physical preparedness. This result contrasted with a study in New Hampshire, which showed that preparedness increased with experience (Mason, *et al*, 2013). To note, this study indicated experienced trekkers as non-first time and the experience level among

the study participants was unknown. This may be why the study did not find any relation between experience and preparedness.

The study found that males had significantly less injury than females, possibly because the female participants had less time for physical preparedness than males, although this was not statistically significant. A study in Colorado had similar findings (Twombly and Schussman, 1995). Even though muscle soreness is generally mild and self-limiting, physical preparedness is recommended to prevent further injury.

The most common medical illness was respiratory tract symptoms, followed by gastrointestinal tract issues. This finding was similar to a study among Thai travelers visiting Laos (Piyaphanee, *et al*, 2014). The cold weather at the campsite in Phukradueng National Park may be the cause.

This study had certain limitations. First, this was a questionnaire-based study as all participants answered questions based on personal perspective and feeling. Second, the enrollment process was done through convenience sampling, so it may have caused selection bias. Selection bias was reduced as much as possible by approaching all trekkers in the Phukradueng National Park area. Finally, study information may have been subject to recall bias due to follow-up time.

The most common health problem was muscle soreness, which was mild and self-limiting. Females tended to be less physically prepared for trekking and more prone to injury than males. Rain protection among study participants was minimal. In conclusion, appropriate preparation and planning may help prevent trekking-related health problems before the trek.

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