

## Article 3

### Safety During Trekking in High Altitude Areas

Har Govind, Division of Safety and Fire Engineering, School of Engineering, CUSAT, Kochi

#### ABSTRACT

Key terms used: Trekking, Uttarakhand, Weather, Safety Protocol, Himalaya, Evacuation.

Trekking is a physical activity aiming at recreation, training, and physical fitness. As a rule, people are engaged in this activity during vacations. However, very often, trekking is the main motive for travelling. This very fact allows us to refer to trekking as a distinct type of tourism, being the very reason to make a trip. The existing body of knowledge in tourism reveals that the trekking trails have global appeal and vast potentials to be established and developed as adventure tourism products destinations in world mountain regions. The adventure tourism is as one of the fastest growing sub-sectors of tourism.

This paper describes the challenges and hazards associated with the trekking Activity. It covers mainly the Avalanche accident scenario with the trekker and trekker team, what type of difficulty they faced during trekking in Uttarakhand High Altitude regions and also suggest some suggestion for safer Trekking. To ensure maximum possible safety on the treks, we have set up a protocol Himalayan High Maximum Safety Assurance Protocol. Proper Planning, proper communication with the local Authority, Weather Analysis and Time for Evacuation are the major key for Safer Trekking.

#### 1. INTRODUCTION

There is no denying the fact that the hilly areas are full of scenic sights almost everywhere. Adding to that, the pleasant chilly atmosphere itself is enough motivation for people to pack up and embark on a road trip to their neighboring hill stations. Venturing in the magical, mystical and heavenly beautiful High altitude remote and rough terrains of the Himalayas gives immense satisfaction to the anxiousness of thrill, the spiritual sense of the soul and curiosity itch of the human race. However, it's very easy to understand that it involves immense risks and might cause fatal consequences as well as on occasions.

Trekking – walking in nature – is a natural activity aiming at recreation, training, and physical fitness (Britannica, 2020). It often constitutes significant part of mountaineering and is a

prerequisite for other activities such as backpack- camping, hunting, orienteering and other recreation activities in nature. Being capable for walking considerable distances without suffering from fatigue also encourages activities such as birdwatching, photography and cultural environment, etc. in Europe, Trekking is one of the most popular recreation and vacation activities (Lane, 1999). According to studies, in France and Italy, more than 1.000.000 trekkers engage in trekking, while, in the United Kingdom, they come to 1.000.000. In Germany, trekking is the third most popular recreation activity.

The research evidences for adventure tourism reveals that it has numerous trekking options and the significant proportions of new tourism attractions with access to the direct and authentic experience of nature and culture, the many of the global mountain trails are integrated with tourism on the forms a distinct trekking and adventure destinations. These trails attract millions of explorers, trekkers, mountaineers, and general-purpose visitors for the purpose of adventure tourism. As such there has been exponential growth in adventure tourism with tourists also visiting destinations previously undiscovered between 2010 and 2014; the adventure tourism industry grew by 195%. Adventure travel is rapidly becoming mainstream. The international adventure tourism market is likely to grow the compound annual growth rate of 45.99% during the period 2016-2020.

### **1.1 Himalayas short Description**

<b>Location</b>	: South and East Asia (Pakistan, India, Bhutan, Tibet and Nepal)
<b>Popular Tracks</b>	: Great Himalaya Track -GHT (Ladakh – Markha Valley trek, Margalla Hills trek, Chomolhari trek, Kanchenjunga Basecamp Trail, Makalu Base Camp Trail, Annapurna Base camp Trail, Rara Khaptad Trekking Trail)
<b>Key Features</b>	: Home to world’s highest peaks including Mount Everest and K2
<b>Key Mountains range</b>	: Over 4500 km of Great Himalaya ranges including Mt Everest, K2, Mt. Kanchenjunga, Mt. Makalu, Mt Cho you, Mt. Annapurna, Manaslu, Mt Dhaulagiri, etc.
<b>Ranges in Altitudes</b>	: Up to 6000m

These Mountains are a valuable natural asset of which the tourism industry very often makes

extensive use. The mountains as in table above are the flourishing ground for adventure tourism products cum destinations as these mountains with several lower and higher peaks of the globe posses enormous trekking trails. Such trails pass through lush green valleys, arid high plateaus and incredible landscapes. In this sense, Mountain tourism as an integral part of global tourism has developed as higher recreation and adventure for tourists who are fond of trekking. The last three decades have seen the deliberate creation of new trails for recreation and adventure tourism purposes (Hayes & MacLeod, 2008).

The Indian State of Uttrakhand, also called as Dev Bhoomi, meaning The Land Of Gods, has some of the finest trekking trails and mountaineering peaks in the Central Himalayas. The mighty river Ganga, also named as India's Lifeline emerges from innumerable stream and rivulets in these mountains. The Gangotri region and network of glaciers is one of the most scariest, yet beautiful zones in the Himalayas. Although the peaks here donot rise as tall as Mt. Everest, but Uttrakhand has some of the mostdifficult to climb mountains in the World. Nanda Devi, which was once considered the highest mountain in the World rises high in these lands. Uttrakhand offers the raw feeling of the Himalayas which is comparable tonone.

What you get	What you fight
Ecstasy, Joy, Fulfillment, Accomplishment, fun, Enjoyment, Memories etc.	Dizziness, Headache, Stomach problems, Nausea, Loss of Appetite, HAPE, Cough, Confusion, Cold , Breathlessness, Fatigue , HACE , Death etc.

**Table 1 High Altitude Seriousness**

## 2. MATERIALS AND METHODS

Mountains constitute 24 percent of the Earth's Surface (UNESCO 2014), Over the years, activities of mountaineering, skiing, via ferrata and hiking are becoming popular. all of which form the development of mountaineering tourism. In Nepal , trekking tours increased from 86,260 in 2011 to 105,000 in 2012 (Mnadhara 2013) and about 10 million people visited Austria's Alps every year (Austrian times 2008) and total of 6854 people have climbed Mount Everest successfully from the year 1956 to 2013 (Traveling Doctor 2014b).

In Uttarakhand, there are so many dangerous trekking spot like Kedartal Trek, Rupin Pass trek,

Kedarkantha trek, Bali Pass trek, Har ki dun Trek, Satopanth Trek, Valley of Flower trek, Brahmatal Trek and Kalindi Khal Trek, Adi Kailash trek, Nanda devi east base camp, Mayali Pass trek and Kanari Khal trek etc. Participants in these activities should be aware of the hazards and risks and accept the risks and be responsible for their own actions. Mountaineering is characterized by the deliberate seeking of risks and the uncertainties of outcomes. It carries the risks - financial, physical (eg. Injury or death), social (e.g. Humiliation), Emotional (e.g. fear, anxiety) and also health.

Most severe hazards during Trekking are - Loose or Falling rocks, Falling ice, snowavalanches, heavy rain fall, extreme Height, Lack of oxygen, Bad weather and fall from snow and most important Landslide etc.

According to some experts, about 85 percent of avalanche victims trigger their own slide. The best thing to do to avoid an avalanche disaster is to steer clear of any snow- covered mountains since increased time in avalanche terrain equals more risk of involvement in an avalanche. Keep in mind that you must think ahead about what you would do in the event of an avalanche, try to move uphill and to the side, in order to avoid the pile-up. You will not be able to outrun it, so don't try. Just get to the side as quickly as you can to avoid the center, where the snow will be at its deepest. If you're getting closed in on, drop your equipment and move fast. If there are trees around, try to grab onto it. Avalanche hazard is not always obvious, but it isn't a mysterious phenomenon either. Avalanche education can help hikers make better decisions about safe snow travel and minimize risk. Fall Many tourists have died while posing for pictures by scrambling around or just walking too close to a canyon rim. Backcountry hikers have slipped or fallen descending friable rock and talus. Stay focused, use common sense, extreme care, and good shoes or don't do it. Step back or turn around and stay safe. There are various dangers related to being at high altitudes such as **altitude sickness** (associated with travel to elevations above 2000-2500m), heat and UV radiation conditions (such as heat exhaustion, heatstroke, sunburn, and snow blindness), and **cold-related conditions** (like hypothermia, frostbite, and immersion foot). Just know the dangers, be both physically and mentally prepared to face the challenges that await you at elevation, and you'll be fine. Head and spine injuries are potentially life-threatening. Such injuries are often caused by falling rock, ice, etc. If your route goes through avalanche and rockfall territory, travel at night or very early morning and move quickly. Watch for changing weather conditions and avoid these areas in heavy **rain**.

### 3.DISCUSSION

#### 3.1 Killer October for UTTARAKHAND

According to Social activist Anoop Nautiyal who has been tracking major natural calamities and accidents in Uttarakhand, said ,October 2022 has indeed been a cruel and sad month for our state as 74 deaths occurred in four major disasters and accidents. The four hill districts of Uttarkashi, Pauri Garhwal, Rudraprayag and Chamoli witnessed these fatalities.”

On October 4 , a team of 41 moutaineers, including 34 trainees and 7 instructors of Uttarkashi based Nehra Institute of moutaineering were hit by an Avalanche. The group had trekked to Mount Draupadi ka Danda- II as part of a high altitude “Navigation and height gain exercise”. They reached the peak at around 4 am on Tuesday and were returning when they were swamped by an avalanche around 8:45 am. Twenty seven people were killed, Twelve escaped with injuries and two are still missing following the incidents. It was happened when the team were returning from Mount Draupadi ka Danda- 2 peak (5760 m). The executive director of Uttarakhand Disaster management Authority, said “ The snout of the glacier si at around 3,700 m while the avalanche was reported somewhere around Mount Draupadi ka Danafterda 2 at an altitude of 5,670m. Fresh snow , massive crevasses and accessibility are major challenges.”

Another Incident, a nine-members team, including three trekkers from West Bengal and six locals. They had left Liwadi village in Uttarkashi district for Khimloga- Chitkul trek on September 1. While trekking, the three trekkers fell in to the crevice of the glacier from a height of 5,600m after which one (Sujoy dubey) died, while two (Subrato and Narottam ) were seriously injured. After that 3 locals came down to inform Officers at an ITBP camp at chitkul about the incident. A case will be registered against all the three trekkers of West Bengal as they had left for the trek without taking the permission from the administration.

<b>Sl. No.</b>	<b>Major Causes for accidents</b>	<b>Suggestion to add safety for future</b>
1.	Lack of communication between Trekkers and Local Authority	Make Proper and easy process for trekkers for registration and provide all the guidelines related to safety and safety equipment.

		(wireless sets, satellite phones)
2.	Bad Weather forecasting	No trekkers should be allowed to trek in Bad. weather condition. Make strict rules for violating the guidelines of local Authority.
3.	Less Alert/ Prepared for Avalanche	Always prepared for everything like Avalanche and by proper planning of time forevacuation should be addressed by the Trainers and Local State authority.
4.	Lack of planning for natural disaster towardstrekking by the government	Extra helpers and assistant guide shall be provide for unplanned events during trekkingand Make the research about the trekking region related to find the best time period for trekking a particular Trek to avoid trekking accidents by the local authority andGovernment.

**Table 2 Causes for accidents and suggestions**

#### 4.RESULTS

To ensure maximum possible safety on the treks, we have set up a protocol Himalayan High Maximum Safety Assurance Protocol. It starts with initial telephonic discussion to check physical fitness level and mental attitude required for trek. Before starting the trek every member of the team provides brief discussion on safety measures and emergency Evacuation plan and equipment to use. The following points are discussed as a result to enhance the safety for trekkers in future-(i) The guide to trekker ratio which we maintain is 1:6 for easier trek and 1:2 for all treks that go beyond 6000m.

(ii)The team will be taken for short acclimatization walks in the evening above 4000m.

(iii) Blood oxygen saturation will be checked every morning and evening above 3500m.

(iv) Mandatory exercise will be done prior to the trek start and cooling down session after reaching the campsite.

(v) Re-hydrating drinks and foods which issuitable for high altitudes to be served more like Dal, garlic soups, tang juices etc.

(vi)We would be providing safe boiled water for use.

(vii) Absolutely no Alcohol allowed during trekking.

(viii) High quality camping equipment, especially tents, High insulating mattresses and Subzero sleeping bags always carry.

(ix) Trek leaders will carry an emergency medicine kit and will contain all necessary high-altitude medicines in it.

(x) Team will be maintaining communication within team by a wireless set and use satellite phones to call office informed at base camp.

(xi) Extra Helpers or assistant guides will be taken in the team for handling unplanned return from the trek.

## 5. CONCLUSION

In this paper a brief review is made over about Safety during Trekking in high altitude areas. The growth of tourists and tourism is usually the main aim for all trail destinations in the world. Trekking is a recreation activity that involves covering any specified journey on foot. Good decision-making can help you avoid most of the hazards on the trail. It's important to do your research carefully and know what to expect from the environment you will be trekking in. Don't be ignorant, casual or complacent, and don't underestimate nature. Remember that underestimating nature and natural forces can not only be a costly mistake but your last one. "Pray for the best; prepare for the worst" as the old saying goes. It is your preparedness and quick reaction that might make the difference between life and death when you need to handle an emergency situation. So, be prepared. Best way to enhancement of safety during trekking are

(i) easy accessible communication between Trekker and local Authority.

(ii) Consideration of Weather and Nature Hazards

(iii) Time for Evacuation and follow all instruction and safety rules during trekking provided by the local authority. Enhancement of trekking trails to international standards that offer quality trail experiences, requires that trails are standardized, monitored and assessed by following a robust system of auditing. This is especially necessary to meet the expectations of the global hiking, walking and trekking tourists.

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