MMSN Journal Club on

# A SEASON AT THE HIMALAYAN RESCUE ASSOCIATION (HRA) AID POST IN MANANG


**Presenter**

Dr. Ranjeet Ghimire

MMSN, Academic Co-ordinator

# Lifetime Health Research Award

- The **Lifetime Achievement Award in Health Research** has been presented to *Dr. Buddha Basnyat.*
- The award was conferred during the Nepal Health Research Council (NHRC) 11th National Summit of Health and Population Scientists.
- The award was presented to Dr. Basnet by Minister of Health and Population Mr Pradeep Paudel and NHRC Executive Member Secretary Dr. Pramod Joshi.

Pic: Lifetime Achievement Award in Health Research has been presented to Dr. Buddha Basnyat

# History of MMSN Journal Club

- 1981: Dr. Buddha Basnyat inspired by Journal Club during his internship in Calgary, Canada; aimed to bring similar concept to Nepal.
- 1984: Returned to Nepal, began teaching at Maharajgunj Medical Campus and got involved in various high altitude research projects.
- 2001: Dr. Basnyat, then President of International Climbing and Mountaineering Federation (UIAA) Medical Commission, discussed the need for a mountain medicine society with Dr. Pritam Neupane at Patan Hospital.
- 2002: Silver Pyramid Project in Everest region became an eye-opener for Dr. Neupane, fostering research interest.
- Initial Team of Medical Doctors and Students along with Dr. Buddha Basnyat Sir and Dr Pritam Neupane:

1. Dr. Sanjay Yadav (IOM 16th batch)
2. Dr. Puncho Gurung (IOM 16th batch)
3. Dr. Santosh Pradhan (IOM 16th batch)
4. Dr. Prajan Subedi (IOM 20th batch)
5. Dr. Prajwol Pant (IOM 20th batch)

*Picture details: First row (left to right): Sajeev Uprety (18th batch, USA), Pritam Neupane, (16th Batch, holding the Bidhan, USA), Sharad Tamrakar (13th batch, Australia), Santosh Pradhan (16th batch, UK). Second row (left to right): Debish Pyakurel (20th batch, Nepal), Puncho Gurung (16th batch, USA), Dr. Buddha Basnyat, Nepal, Sanjay Yadav (16th batch, USA), Bhabishwor Tiwari (16th batch, USA), Prajwal Pant (20th Batch USA).*

# History of MMSN Journal Club

- Named "MMASN" (initially “Masaan” inspired by graveyard symbolism).
- Formal Name: Mountain Medicine Society of Nepal (MMSN).
- Dr. Buddha Basnyat became the President.
- Dr. Pritam Neupane served as Vice-President.
- Early Objectives:

1. Promote high-altitude medicine and research.
2. Educate medical students on altitude-related issues.

- Journal Club launched as a signature academic activity where important trials in high-altitude medicine were discussed every month.

Pic : Past MMSN Journal Club Photos



Sources : MMSN Newsletter Vol. 15 and MMSN Facebook Page

# Introduction

## A Season at the Himalayan Rescue Association Aid Post in Manang

Wilderness & Environmental Medicine
2024, Vol. 35(3) 308-313



DOI: 10.1177/10806032241257923
www.wemjournal.org

Shashank Timilsina, MBBS[1], Geoffrey E. Hillwood, MBBS, MPH[2], Guy E. Thwaites, MBBS, PhD[3,4], C. Louise Thwaites, MBBS, MD[3,4], and Thaneshwar Bhandari, MEd[5]

# Introduction

- The establishment and purpose of the Himalayan Rescue Association and its high-altitude aid posts.
- The specific aim and operations of the  HRA Aid Post in Manang
- Provide a description of the activities, clinical problems, and lecture attendees of the HRA aid post in Manang over one season.
- The rising number of trekkers with improved road access and  making rapid ascent possible which makes trekkers more  vulnerable to high-altitude sickness
- Major challenges and implications of operating a high-altitude aid post
- This study covers clinical and educational activities from Sep 24 –Dec 1, 2023 in Manang Aid Post.

# Establishment of Himalayan Rescue Association (HRA)

## *Vision and Foundation*

- Founded in 1973 to reduce deaths and illness in the Himalayas.
- Inspired by Dr. John Skow after witnessing altitude-related deaths.
- Formed through joint effort of Ministry of Health, doctors, and trekking companies.
- Registered as a Nepali organization to provide education, care, and rescue.
- First aid post opened in Pheriche (4,250 m) in 1973 to treat and prevent AMS.

# Establishment of Himalayan Rescue Association (HRA)

## *Growth and Milestones*

- Opened a second aid post in Manang(3550m) in 1981, expanding services beyond Pheriche.
- Temporary aid posts at Everest Base Camp (“Everest ER”) from 2003 for the spring climbing seasons.
- Runs seasonal camps like Gosaikunda during Janai Purnima for local pilgrims.
- Publishes altitude illness guides in Nepali and English for public awareness.
- Partnered with MMSN and global volunteers to lead in mountain rescue and care.


Pic : Reconstruction of Manang Aid Post Infrastructures after a severe earthquake damage by HRA in collaboration with Human Outreach Project..



Sources : World Wide Trekking Video

# High Altitude Awareness Boards




Sources : https://www.alamy.com/stock-photo-himalayan-rescue-association-first-aid-post-at-pheriche-village

# Tourism in Nepal

- Tourist arrivals grew from 68,047 in 1973 to 1.2 million in 2019, before COVID-19 impacted travel.
- In 2023, the Annapurna region welcomed 191,558 tourists from 173 countries.
- Trekking, once dominated by Westerners, now attracts visitors from across the globe, including a rising number of Nepali pilgrims.
- New roads enable faster access to high-altitude areas like Manang and Tilicho, but also increase the risk of altitude illness.
- Tourism patterns now include religious treks, adventure travel, and social media-driven exploration, especially among young Nepalis.

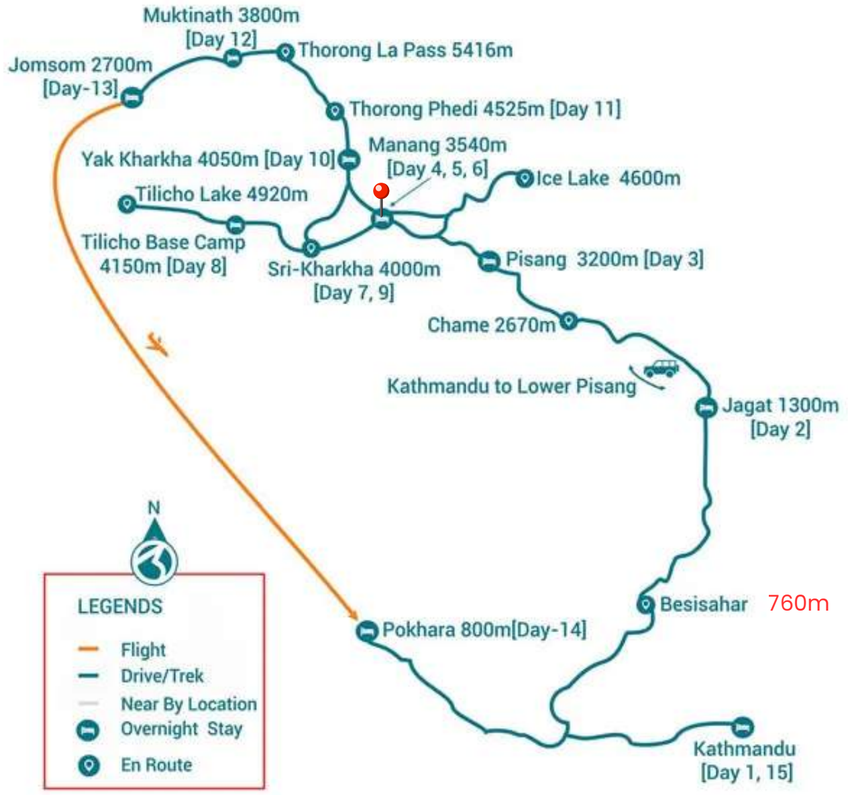
Pic : Tourism in Nepal



Sources : nb.gov.np

# About Manang Valley

- Manang Valley lies in northern Manang district, with just 5,658 people over 2,246 sq km.
- The village sits at 3,550 m on the Annapurna Circuit, en route to Thorong Pass (5,416 m).
- Previously, it took a week-long trek from Besisahar (760m) to reach Manang.
- A 4-wheel-drive vehicles road, built from 2010–2014, now allows a 7-hour drive to Manang(3,550) or Khangsar (3750 m)..
- Road access has changed trekking patterns—many skip traditional routes and ascend too quickly, raising AMS risk.
- In fall 2023, the HRA aid post in Manang was staffed by 4 volunteers: 1 Nepali medical officer and 3 foreign doctors.



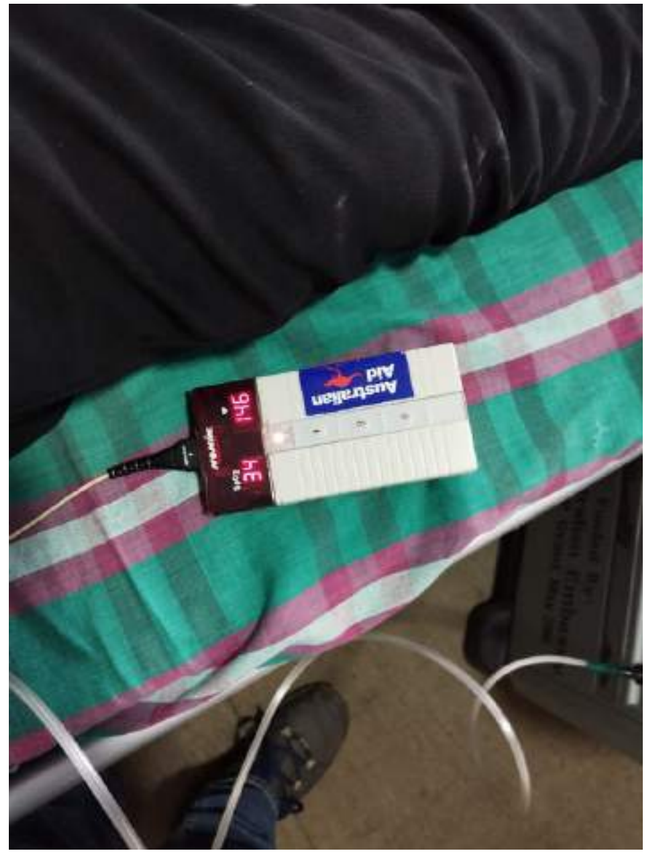

Pic : Roadway to Manang Valley

# The Team at HRA Aid Post in Manang

Pic : The 2023 Fall Team, from left to right: Dr. Geoffrey, his wife Vicky, Thaneshwor (clinic coordinator), Dr. Shashank, Dr. Louise, Dr. Guy, and Wangchhe (cook).

# Services Provided

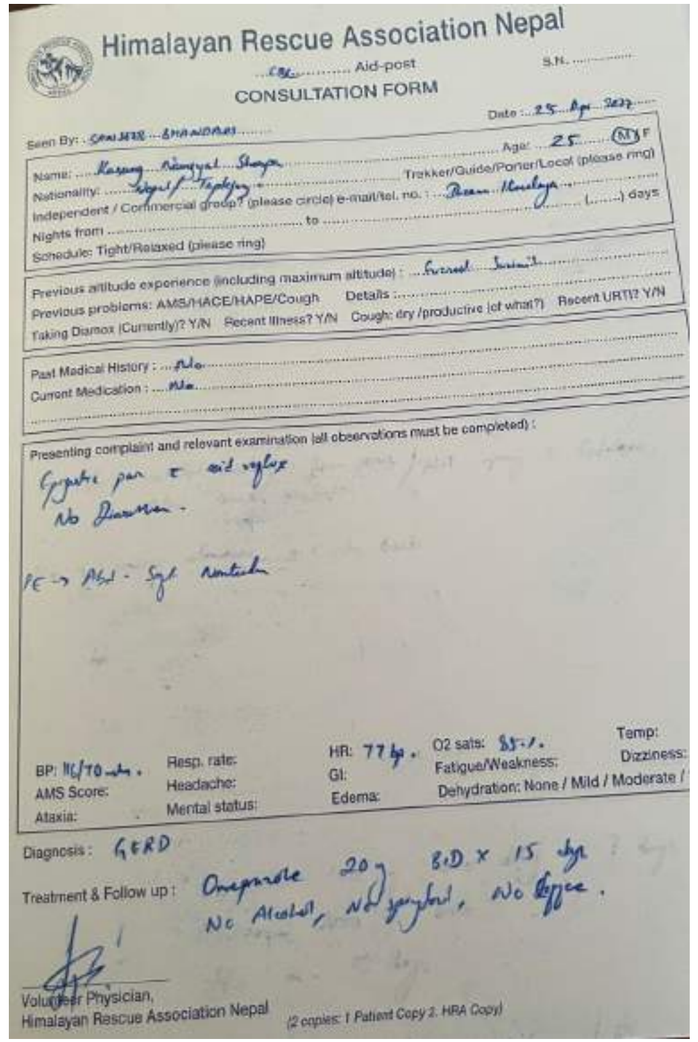
- Daily free lectures on altitude illness prevention were held for trekkers, guides, and porters.
- Flyers were distributed around town to advertise health talks and promote awareness.
- The clinic was equipped with vital diagnostic tools like ECG, portable ultrasound, pulse oximeter, urine dipstick kits, a blood glucose monitor, and urine pregnancy kits.
- Emergency drugs available
- Patients needing advanced care were referred to Manang Hospital in Chame (30 km) or evacuated to Kathmandu or Pokhara by jeep or helicopter.




Sources : Drop in oxygen saturation in a patient with HAPE

# Data Collection:

- Permission to report the clinic's activities was obtained from the HRA Board of Directors.
- Data was collected prospectively using a pre-designed paper form.
- Diagnoses were cross-verified by a second doctor using standard established guidelines AMS, HAPE, and HACE.
- Lecture attendance was tracked using a registration book with names and nationalities.
- Clinic operated from Sep 24 to Dec 1, 2023, handling 376 total cases.



Himalayan Rescue Association Nepal

CB Aid-post S.N.

CONSULTATION FORM

Seen By: Date: 25 Apr 2022

Name: Nationality: Trekker/Guide/Porter/Local (please ring)

Independent / Commercial group? (please circle) e-mail/tel. no.:

Nights from to (.....) days

Schedule: Tight/Relaxed (please ring)

Previous altitude experience (including maximum altitude):

Previous problems: AMS/HACE/HAPE/Cough Details

Taking Diamox (Currently)? Y/N Recent Illness? Y/N Cough: dry /productive (of what?) Recent URTI? Y/N

Past Medical History :

Current Medication :

Presenting complaint and relevant examination (all observations must be completed) :

BP: Resp. rate: HR: O2 sats: Temp:

AMS Score: Headache: GI: Fatigue/Weakness: Dizziness:

Ataxia: Mental status: Edema: Dehydration: None / Mild / Moderate /

Diagnosis :

Treatment & Follow up :

Volunteer Physician,
Himalayan Rescue Association Nepal

(2 copies: 1 Patient Copy 2. HRA Copy)

Pic : A sample of HRA Proforma

# Result

## Patient Demographics

- Total patients seen: 376 (from Sep 24 – Nov 30, 2023).
- 62% (233) were Nepali nationals; rest from 35 countries.
- Age group 20–39 made up the majority (55%); ~10% were <20 and >60.

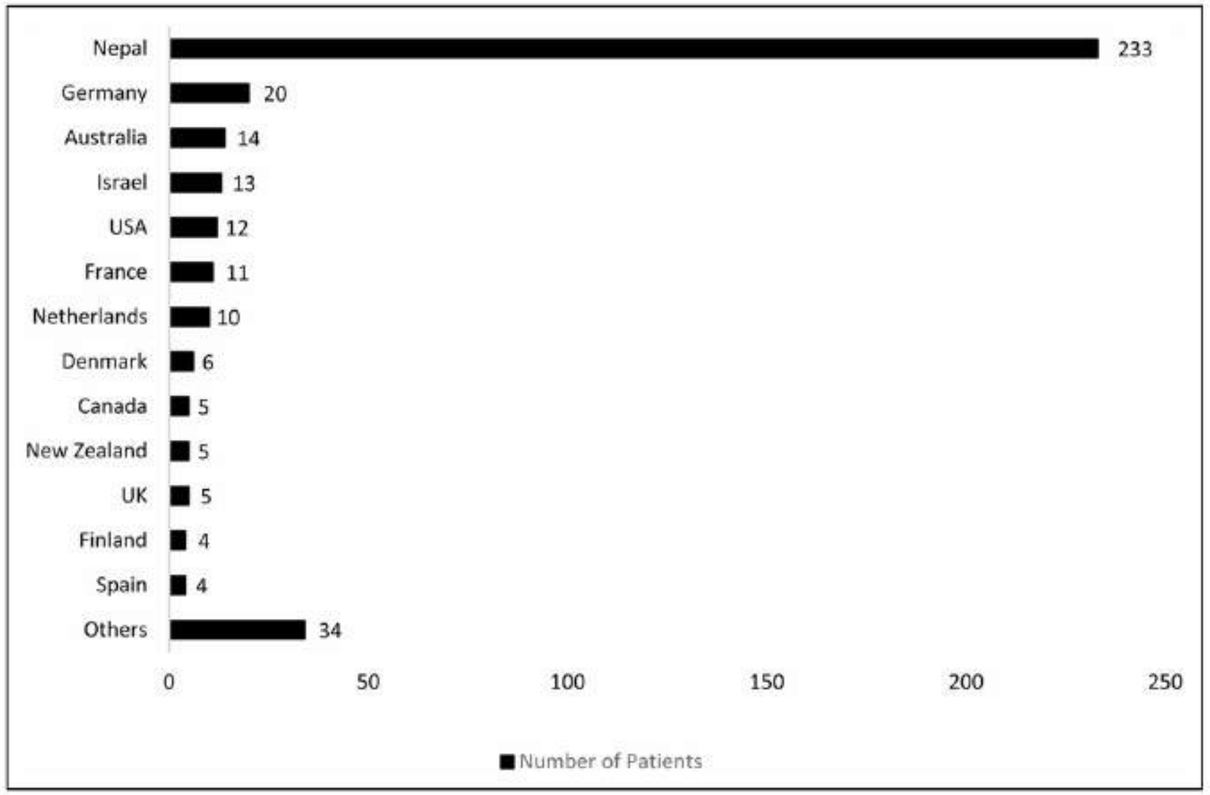



**Figure 1.** Distribution of patients seen in the clinic by nationality.

# Result

## Disease Profile

- Infectious diseases were most common (42%), led by upper respiratory infections (61%).
- Altitude Illness were reported among 66 patients accounting 17%.
- Musculoskeletal issues (10%), mostly trekking-related, were frequent.
- Other infections included skin and soft-tissue abscesses, dengue, and scabies.
- Emergency cases included acute anaphylaxis, 1 acute appendicitis, 1 fall injury and several motor vehicle crashes.

**Table 1.** Distribution of diseases by diagnostic category and the categories of infectious disease diagnoses.

| Diagnostic category | | | N (%) |
|---|---|---|---|
| Infectious | Subcategory | N (%) | 165 (42) |
| | Upper respiratory | 101 (61) | |
| | Gastrointestinal | 26 (16) | |
| | Lower respiratory | 10 (6) | |
| | Dermatologic | 10 (6) | |
| | Ear | 6 (4) | |
| | Urinary tract | 4 (2) | |
| | Other | 8 (5) | |
| Altitude illness | | | 66 (17) |
| Musculoskeletal | | | 39 (10) |
| Dermatologic | | | 25 (6) |
| Gastrointestinal | | | 16 (4) |
| Traumatic | | | 12 (3) |
| General | | | 12 (3) |
| ENT | | | 9 (2) |
| Neurologic | | | 7 (2) |
| Other | | | 42 (11) |
| Total | | | 393 (100) |

ENT, ear, nose, and throat

Fig 2 : Disease Profile

# Result

## Altitude Illness Cases

- Altitude-related illness accounted for 17% of total diagnoses.
- Second most common reason for consultation
- Diagnoses included 57 AMS, 5 HAPE, 1 AMS + HAPE, 1 HAPE + HACE, 4 High Altitude Cough and 1 Ventricular Bigeminy
- No standalone HACE was reported.
- Cases surged during Nepali festival season, especially among fast-ascending pilgrims.

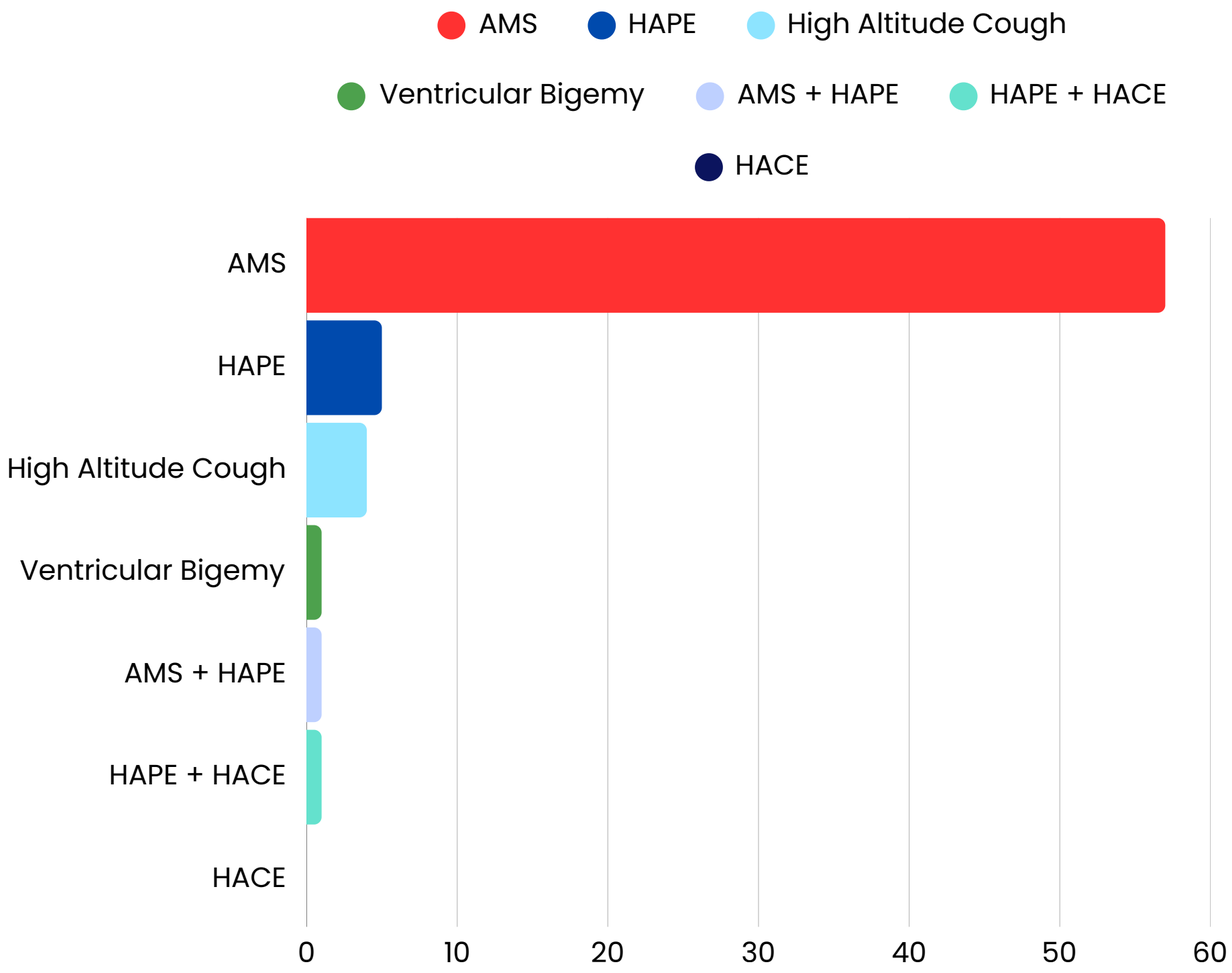
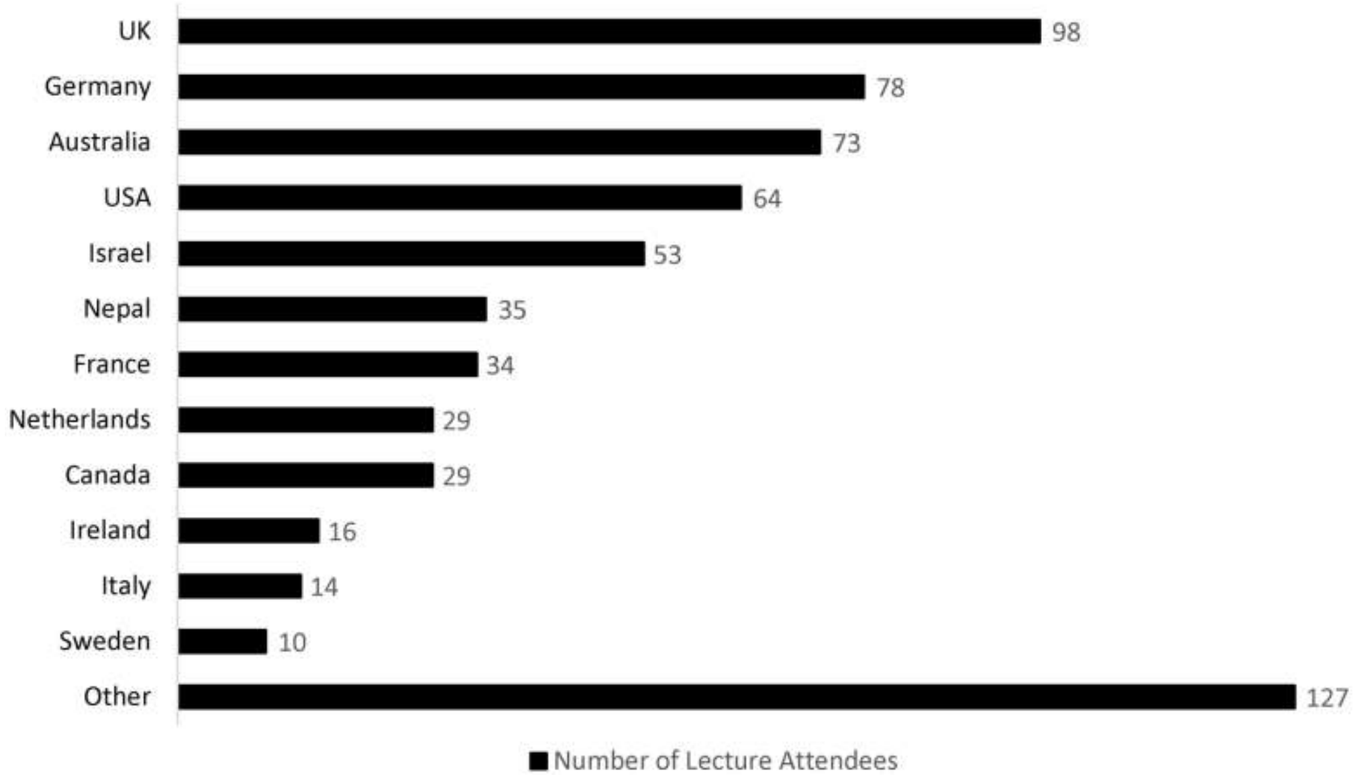



Fig : Number of Altitude Illness Cases Seen in the Aid Post

# Result

## Educational Outreach

- 846 attendees from 47 countries attended daily altitude lectures.
- Only 5% were Nepali, mostly guides with trekking groups.



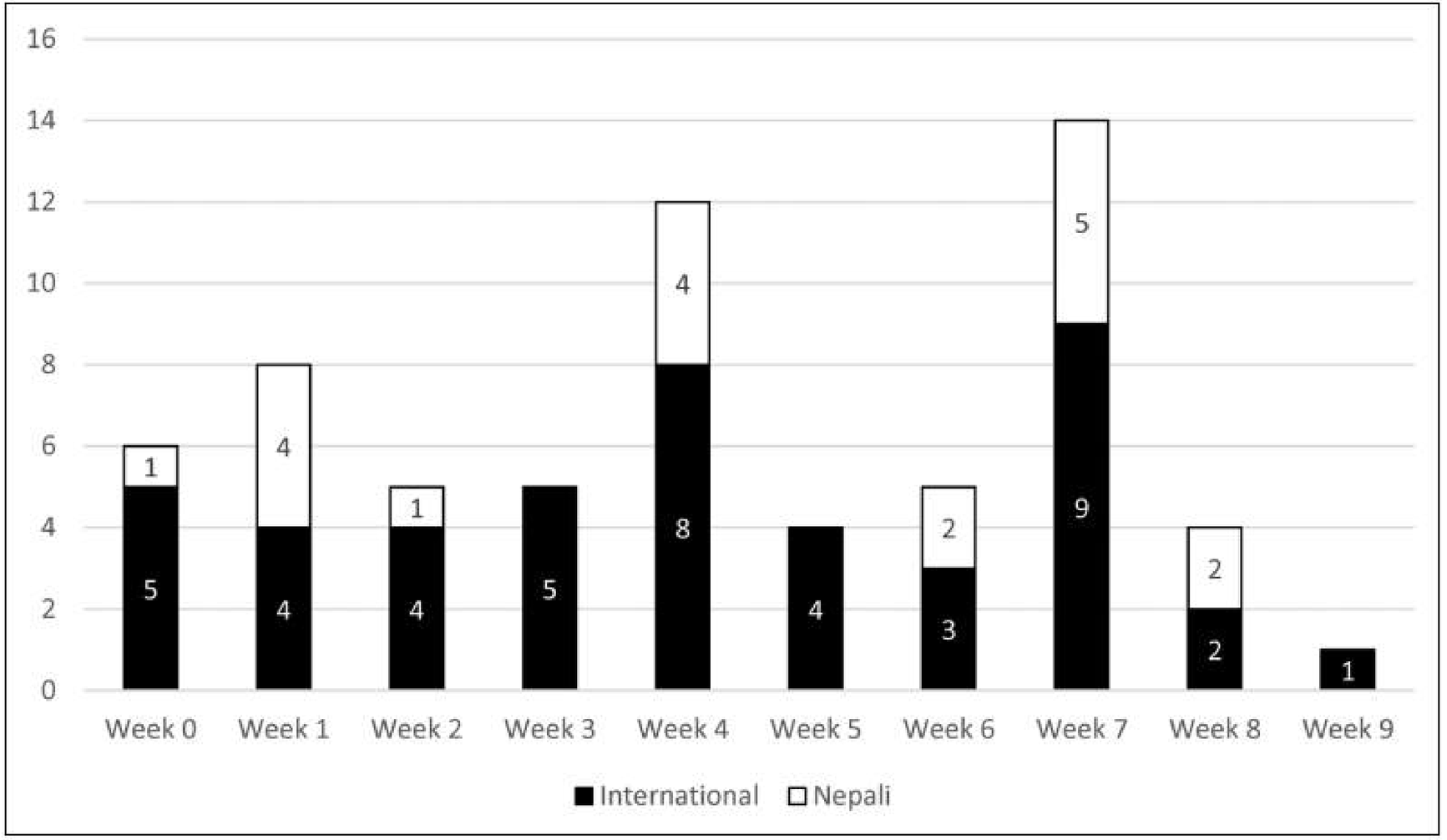



**Figure 2.** Distribution of patients with altitude illness by week. Week 0 started on September 4, 2023, and Week 9 terminated on November 30, 2023. The Nepali festival season spanned from Week 3 to Week 7, during which we had expected the cases of altitude illness to rise among Nepalis. However, the two spikes in Weeks 4 and 7 were mostly attributable to international patients.

# Challenges

- Intermittent electricity power outages were frequent; a hydroelectric plant failure took 4 weeks to repair, forcing reliance on solar backup.
- Evacuation was limited by weather and daylight, with helicopters unable to fly at night and roads requiring long, high-clearance vehicle travel.
- Many Nepali and some foreign trekkers lacked helicopter insurance, making emergency evacuations expensive and difficult.
- The rapid ascent made possible by new roads led to increased cases of altitude illness, especially among unaware Nepali pilgrims.
- Language barriers during health education limited the effectiveness of daily lectures, which were only in English, leaving out non-English speakers

# Learnings

- Increasing tourism diversity is driving up healthcare needs at altitude.
- Road access is causing faster ascent, leading to more altitude illness.
- The study fills a data gap on real-time aid post operations.
- Insights can help plan staffing, education, and emergency response.
- Emphasizes the need for multilingual health education for broader reach.

| Category | Learning Objective |
|---|---|
| Altitude Awareness | Understand high and very high altitude thresholds. |
| Altitude Awareness | Know how oxygen levels decrease with altitude. |
| Altitude Awareness | Recognize body's physiological changes at altitude. |
| Altitude Awareness | Learn how acclimatization works. |
| Altitude Awareness | Understand acclimatization vs. adaptation. |
| Illness Identification | Identify symptoms of Acute Mountain Sickness (AMS). |
| Illness Identification | Recognize signs of High Altitude Pulmonary Edema (HAPE). |
| Illness Identification | Recognize signs of High Altitude Cerebral Edema (HACE). |
| Illness Identification | Differentiate altitude illness from other illnesses. |
| Illness Identification | Know altitude illness can affect anyone. |
| Prevention | Ascend slowly—300–500 m/day above 3,000 m. |
| Prevention | Plan rest days every 3–4 days for acclimatization. |
| Prevention | Hydrate well, eat properly, and sleep sufficiently. |
| Prevention | Avoid alcohol and sedatives at altitude. |
| Prevention | Know past altitude illness increases future risk. |
| Medications | Understand acetazolamide (Diamox) use and function. |
| Medications | Know emergency use of dexamethasone. |
| Medications | Consult doctors before using altitude medications. |
| Medications | Be aware of medication side effects and risks. |
| Emergency Response | Know when immediate descent is necessary. |
| Emergency Response | Descent is the best treatment for altitude illness. |
| Emergency Response | Use oxygen or pressure bags if available. |
| Emergency Response | Locate nearest medical aid posts and evac options. |
| Emergency Response | Have rescue insurance before trekking. |
| Travel Prep | Carry a health kit suited for high altitude. |
| Travel Prep | Ensure access to clean water and proper gear. |
| Travel Prep | Use GPS or satellite devices for emergencies. |
| Travel Prep | Know local terrain, climate, and regulations. |

Fig : The Strengthening Altitude Knowledge consensus statement that describes 28 learning objectives laypersons should know before traveling to altitude



Pic Credit : Strengthening Altitude Knowledge: A Delphi Study to Define Minimum Knowledge of Altitude Illness for Laypersons Traveling to High

# Limitations

- Short study duration (Sep 24 – Dec 1, 2023) limits seasonal comparison.
- Tool used for data entry and analysis not specified
- Lack of data on patient co-morbidities, ascent profile, prior trekking history/prior exposure to Altitude Illnesses, gender wise distribution
- Lack of follow-up after evacuation or referral limits outcome tracking.
- Educational impact of lectures wasn't formally measured or evaluated.

Pic: Helicopter rescues are common during the season, and HRA doctors often get a chance to hitch a ride. On Tihar, Dr Timilsina planned to cross the pass, visit Muktinath for blessings, and reach home in Pokhara. But just an hour into the journey, he met an elderly American woman who had called an insurance helicopter—for a back sprain! When the helicopter arrived, he introduced himself, asked the pilot if he could join, and just like that—he was on my way to Pokhara!

# Photos shared by Dr. Shashank Timilsina

Pic: High-altitude medicine keeps evolving, and with it, unexpected challenges. Twenty years ago, who would have imagined motor vehicle accidents in the remote Himalayas? This time, a presumed femur fracture—the frozen roads proving too treacherous for a motorbike. The limb was immobilized, and the patient swiftly evacuated by helicopter.

Pic: Besisahar to Khangsar in a single day, then onward to Tilicho. His lungs struggled, and so did his brain. The signs were clear, with vomit stains on his clothes. Thankfully, he was stabilized and transported to lower elevations by jeep.

Pic: 500 meters over a cliff—with a patient in tow. No easy task, especially without a rotation. Luckily, Dr. Guy had some help from passersby, but when the patient is heavy, every step feels like a battle.

# Photos shared by Dr. Shashank Timilsina


Pic: I completed the journey at the end of the season with Dr. Guy and Dr. Louise, finally crossing the pass—a fitting way to wrap up the adventure.

Pic:  By the end of the season, the clinic barely resembled a clinic—more like a meat shop, with little to no patients Dr. Shashank, stood guard over his drying mountain goat sukuti, fending off dogs and vultures eager for a feast.

Pic: Manang's harsh soil and climate make farming tough, but while the warmth lasted, we savored fresh local veggies—straight from the fields.

# Photos shared by Dr. Shashank Timilsina


Pic: Between treating patients and navigating the challenges of high-altitude medicine, cow patrol seems to be an unofficial but essential duty. We had to protect the little garden by Wangchhe at any cost!

Pic:  Dr. Shashank, Dr. Geoffrey, and Vicky visited Tilicho Lake during peak tourist season, when hotels at the base camp were packed—people slept anywhere they could, as long as they had four walls and a blanket. Dining halls overflowed with sleepers on the floor, but luckily, the HRA team secured proper beds.

Pic: With the Aani, a dedicated female Buddhist monk, who lives alone in a monastery perched atop a hill—just above the HRA clinic. HRA doctors would often visit her, checking in on her well-being, monitoring her blood pressure, and ensuring she remained in good health.

# Similar Articles

J Travel Med. 1999 Dec;6(4):217-22. doi: 10.1111/j.1708-8305.1999.tb00521.x.

## Trends in the workload of the two high altitude aid posts in the Nepal Himalayas

B Basnyat [1], G K Savard, K Zafren

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Free article



*Results:* Approximately 20% of all visitors (Nepali plus trekkers) who visited the higher Pheriche aid post were diagnosed with AMS compared to around 6% at the lower Manang aid post. There was a linear increase over time in the number of trekkers entering the Everest (r=0.904, p<.001) and the Annapurna (r=0.887, p<.001) regions. The proportion of trekker patients with any medical condition visiting the two HRA aid posts at Manang and Pheriche, expressed as a function of the total number of trekkers entering the Everest and Annapurna regions, was not significantly different between Pheriche (average 4%) and Manang (average 1%). However, the proportion of AMS, HAPE and HACE in patients (Nepali plus trekkers) to the aid posts was greater in those visiting the higher Pheriche aid post compared to the lower Manang aid post (f=56.74, n=13; p<.001). Importantly, only the proportion of AMS (r=0.568; p<.05) and not HAPE or HACE increased over time in Pheriche, alongside an unchanged proportion of trekker patients, amongst all Pheriche aid post patients. There was no increase of AMS, HAPE or HACE in Manang.

# Similar Articles

Wilderness & Environmental Medicine
Volume 28, Issue 4, December 2017, Pages 332-338

https://doi.org/10.1016/j.wem.2017.06.003

*Brief Report*

## Impact of a Newly Constructed Motor Vehicle Road on Altitude Illness in the Nepal Himalayas

**Jonathan Reisman, MD [a,*], Dinesh Deonarain, MD [a], and Buddha Basnyat, MD [a,b]**

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**Jonathan Reisman, MD[a,*], Dinesh Deonarain, MD[a], and Buddha Basnyat, MD[a,b]**

### Results

During fall 2016, 453 patients were evaluated at the HRA Manang clinic, of whom 91 (20%) were diagnosed with altitude illness. The demographic and diagnostic breakdown of the study population is shown in Table 1. Of these 91 patients with altitude illness, more than half (n = 49, 54%) traveled by motorized vehicle for at least part of their journey from low altitude to Manang. One-third (n = 30, 33%) reached Manang from Besisahar in less than 48 hours. Of those traveling by vehicle, 48 patients were diagnosed with AMS (58% of all patients with AMS), 2 patients were diagnosed with HACE (25% of all patients with HACE), and 5 patients were diagnosed with HAPE (100% of all patients with HAPE). Seven patients (8%) initially trekked to Manang on foot but then took a vehicle the rest of the way once they began to feel ill because of altitude symptoms, entailing further altitude gain.

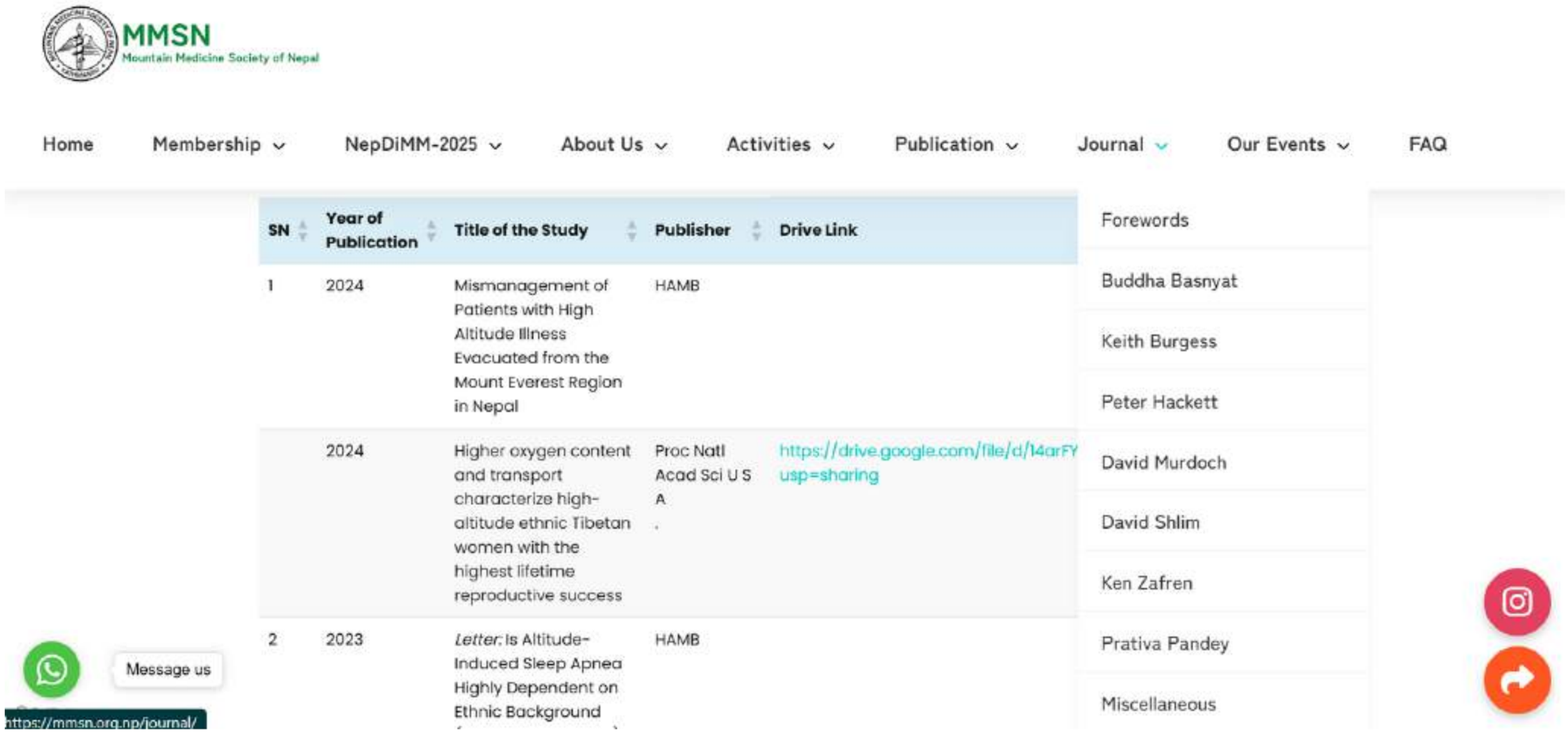
# Similar Articles

## A Prospective Epidemiological Study of Acute Mountain Sickness in Nepalese Pilgrims Ascending to High Altitud (4380 m)

Martin J. MacInnis, Eric A. Carter, Michael G. Freeman, Bidur Prasad Pandit, Ashmita Siwakoti, Ankita Subedi, Utsav Timalsina, Nadia Widmer, Ghan Bahadur Thapa, Michael S. Koehle, Jim L. Rupert

Published: October 9, 2013 • https://doi.org/10.1371/journal.pone.0075644

# Journals

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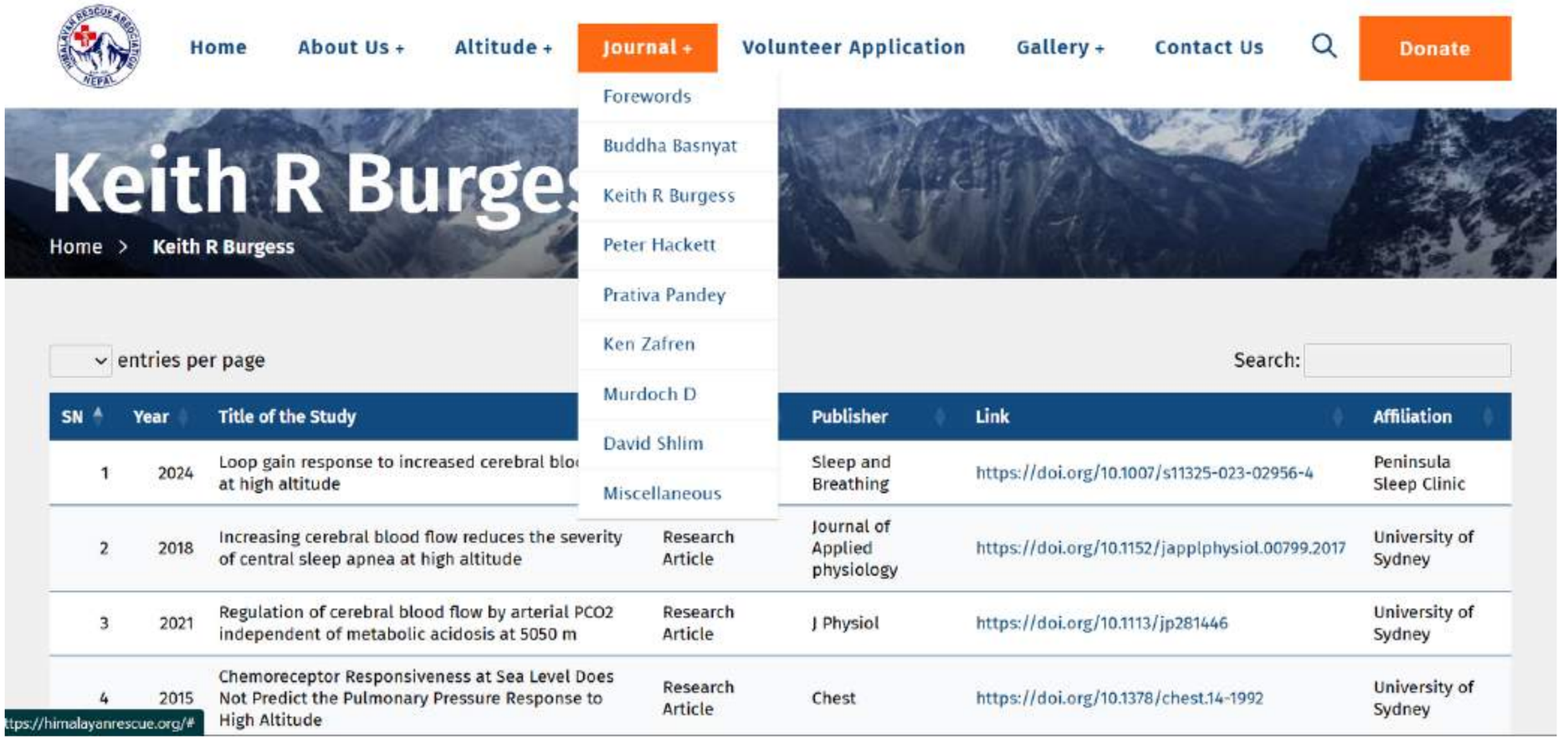


HRA Journal Library

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