



# Journal of Tourism and Himalayan Adventures

*An International Research Journal*



June 2021, Vol. 3, ISSN: 2717-5030 (Print) 2738-9642 (Online)

---

## Local Porters<sup>1</sup> in Nepal: Acute Mountain Sickness and Load Weight of Cargo Carrying Wendy Hillman

*Senior Lecturer, Sociology, Central Queensland University, Australia  
Corresponding Address: hillman.wendy@gmail.com*

### Abstract

Local porters who haul burdens for trekkers are understudied and underappreciated for the labour they do in Nepal. Their susceptibility to Acute Mountain Sickness (AMS) along with the weight of the loads they haul and carry in return for meagre payment, contribute to the difficulties of their very austere and under-resourced employment. They are frequently underpaid for their efforts. Acknowledgement by government organizations and trekking business owners could make their employment more viable by giving them a higher wage in spite of their occupation struggles. Data was gathered from 31 porters completing instruction at a Nepali Porters' training establishment, based in Kathmandu, Nepal. The research used semi-structured in-depth interviews. Participants participated in a 45-60-minute interview, which was recorded at the field site. All the interviews were documented and then transcribed into English by a bilingual Nepali PhD student. The data was coded using a hierarchical, thematic coding structure approach. Findings showed that porters knew about and had experienced AMS, and that their work of carrying heavy cargoes for trekkers and trekking companies were often not compliant with prescribed kilogram load limits.

**Keywords:** Local porters, trekking, acute mountain sickness, cargo/load carrying weights

### Introduction

Within Nepal, local porters are load carrying individuals from underprivileged economic circumstances who support trekking or expedition groups in carrying their cargo. They are the mainstay of the remote region economy as they are the key form of haulage across the mountain areas of Nepal. They provide rudimentary requirements for their extended family from the income secured by lugging the large and considerable gear of trekkers (Upadhyaya & Upreti, 2008b) and others.

In many provinces of the Nepal Himalayas, portering of burdensome loads has not been a volunteer form of livelihood, but rather, has been imposed upon a number of inhabitants by "power and poverty" (Bellows, 2014; Malville, 2005; Campbell, 1995). Prior to 1950, for instance, the Trisuli Tamangs living adjacent to Kathmandu in north-central Nepal were not authorised to sign up to the Gurkha corps, but were obligated by the Rana administration in

---

<sup>1</sup> According to MoCTCA (2020) "Local porter" means the porter who carries the cargo of the trekking or expedition team to and from the Base Camp, and other places in between (2020, p. 457).

Kathmandu to be responsible for labour exacted in lieu of taxes by public authorities, carting loads and conserving tracks on the trans-Himalayan trade route linking Kathmandu and Tibet (Campbell, 1995). A further cultural group in Kathmandu who were once compelled to convey burdens for the palace and the army are the Duyiaa (or Duhim); a low caste of the Newari, who now function as agricultural workhands and as incognito entertainers in religious festivals (Bellows, 2014; Malville, 2005; Bista, 1971).

Local porters are inclined to travel together in extensive, interdependent clusters of networks and relations from comparable or nearby communities. In contrast to trekking and team porters, these porter groups are self-controlled and self-regulated. The bulk of the porters (70%) belong to cultural hill tribes of Tibeto-Nepali descent, but all of the main castes and cultural amalgamations of the eastern hills are found in fluctuating numbers (Malville, 2005; Malville, 1999; Bista, 1971)<sup>1</sup>.

Despite being the mainstay of the Nepali trekking industry, porters are missing in policy and academic discourse (Hardwell, 2014). Furthermore, it is only after disasters and natural catastrophes that porters unify and co-operatively negotiate with policymakers to enhance their working conditions and reimbursement levels (Khadka, 2015). Adding to the literature and research on this significant topic will help to inspire the Nepali government (and in particular, the Ministry of Culture, Tourism, and Civil Aviation (MoCTCA)), the Trekking Agencies' Association of Nepal (TAAN) and policymakers to acknowledge the difficulties of these industrious workers, and lobby for change, acknowledgement and appropriate safeguards for them within their occupation (Shrestha, 2018a; Shrestha, 2018b; Khadka, 2015).

## Objective

The focus of the research was to investigate how local porters in Nepal experience portering as a member of a trekking or mountaineering team in the Himalayas. Specifically, how local porters succumb to and experience AMS was the first variable to be identified and investigated for the research. Secondly, how porters cope with carrying the oftentimes oversize cargo for the trekking and mountaineering teams who employ them was also explored. Interviews with training porters were undertaken to find out their perspectives on their situations concerning AMS and load carrying weight. The overall health of porters has endured neglect both in the cited texts and in everyday conditions in situ. Many Nepali porters have been regarded with little importance by operators, proprietors and travellers within the tourism industry in Nepal (Law & Rodway, 2008). Thus far, there has been little data collection concerning the effects of AMS and load carrying kilogram weights of these essential workers in this industry. This study investigates these important issues about the individuals involved in an important growth industry in Nepal.

## Literature review

Similar to the research conducted and outlined here, other research carried out by Lama (2006) in Sagarmatha National Park (SNP) suggests that the real benefit porters' gain from tourism in Nepal is still in doubt. His research findings draw attention to major problems faced by porters while undertaking their specialized work in the mountains of Nepal. These problems include issues such as the difficulty of securing appropriate lodgings in trekking areas, a lack of available treatment in case of an accident while travelling, inadequate wage

<sup>1</sup> Indeed, the author has experienced this first-hand when undertaking the Everest Base Camp trek.

rates, unsatisfactory clothing and gear, no accident insurance, and bias or prejudice of trekkers towards them. Indeed, this current inquiry also suggests that it is difficult for porters to obtain adequate clothing when undertaking trekking employment, as clothing is expected to be provided by the porters themselves. As the porters do not have the financial means to acquire this necessary equipment themselves, they just use what they have to hand; or seek out the assistance of porters' charitable and training organizations such as the Porters Clothing Bank<sup>2</sup>, based in Thamel, Kathmandu.

According to this research, and in line with Upadhyaya and Upreti (2008a), and Lama (2006) the dilemmas encountered by porters in mountain tourism and associated pursuits; additionally need support for the design of broad training and knowledge programs for themselves from within porters' associations; design of specialized education curricula for porters, and a distinct need for mobile instruction in remote regions, predominantly concentrating on individual cleanliness, elementary fitness, acute mountain sickness, simple interaction proficiencies, and appreciation of prospective risks and safety perspectives; erection of porter lodgings in diverse encampment locations; and a revision of the establishment of wages for porters according to the altitude (Barott, 2018; Bellows, 2014; Upadhyaya & Upreti, 2008a).

Parajuli (2009) contends that only a small sector of porters (23%) have information about different organisations operating for their wellbeing. The current research also found, and in line with Parajuli (2009), that a preponderance of porters (80.5%) were content with their employment and reimbursement and will keep on working as a porter even though they believe their job is hazardous. On the other hand, and according to Malville (2005), apart from their physically challenging livelihood, the porters exhibit no suggestion of enduring medical ailments that may be attributed to the continuous transport of burdensome freight (Barott, 2018; Bellows, 2014; Devkota, 1995; see also Malville, 2005; Malville et al., 2001; Malville, 1999; Devkota in Dixit, 1995).

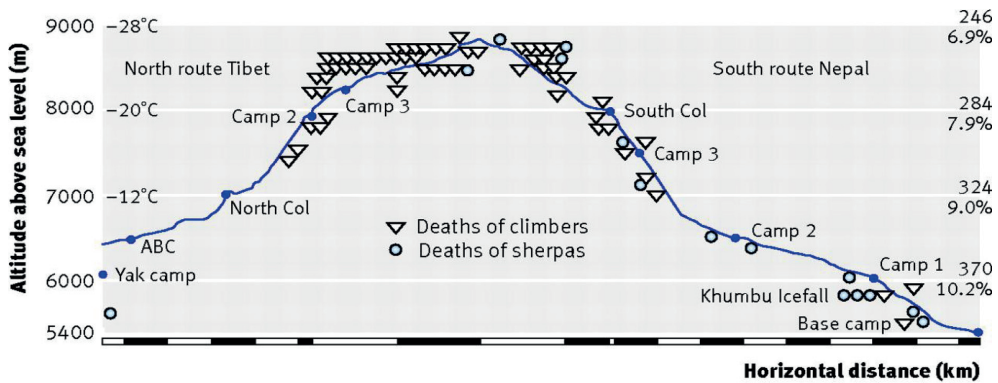
The elemental reason for undertaking this research is highlighted by Basnyat (2007), who has argued that no adequate research has been undertaken on porters. In a private discussion, he indicated that "this (Nepal) is not a documenting society", which has made plain why there are not many dependable documents about porters and why verification of how their lives have altered is not well represented. Basnyat reported that there is no verification that portering in reality injures porters' bodies (personal communication, April 30, 2007); in effect, he cited a project of 102 porters that was well-known for the non-existence of musculoskeletal troubles (Basnyat & Litch, 1997). Basnyat accepts that the recommended maximum of 30 kg per porter is practical and that they could carry such loads actively without enduring substantial difficulties associated with this form of labour. He did not reject that porters confront wellbeing crises - for instance, he has witnessed several porters suffering from frostbite (Barott, 2018; Law & Rodway, 2008; Basnyat & Litch, 1997). The current inquiry also found that porters wore inadequate clothing, particularly adequate footwear when carrying trekking group loads in the mountains.

According to Dawadi, Basnyat and Adhikari (2020), all Sherpa porters are not from lofty elevation locations. In effect, a considerable percentage of them are from diverse ethnic

<sup>2</sup> *The Porters Clothing Bank, is operated by the Kathmandu Environmental Education Project (KEEP), based in Thamel, Kathmandu. According to the CEO, Ian Wall: "KEEP provides the services of an un-biased visitors' trekking advice centre, Porter Clothing and Porter Welfare Centre, and, an organisation with an environmental purpose" (<https://www.theintrepidfoundation.org/kathmandu-environmental-education-project>).*

origins and inhabit low elevations and only journey to lofty elevation locations for employment (Barott, 2018; Koirala et al., 2018; Newcomb et al., 2011; Malville et al., 2001). Consequently, they are also susceptible to AMS similar to other trekkers. This vulnerability is contrary to the porters from lofty elevations who may be innately more acclimated to high altitudes (Droma et al., 2008). The Sherpa porters have now commonly been replaced by other valley dwelling ethnic cultures such as Chhetris, Bahuns, Limbus and Rais (see Parajuli, 2009), who are in all probability more susceptible to struggle with altitude linked complications. These porters, consequently, experience the same risk of AMS as any trekker would do (Bellows, 2014; Basnyat & Le Master, 2001). An absence of familiarity about the indicators, preclusion, and hesitancy to register any signs of AMS may explain the frequency of the condition in porters (Newcomb et al., 2011). The reality that porters are also in danger of risk of AMS is very significant for trekking cohorts, businesses, and tourists to identify as there is frequently a fictitious presumption that porters working at lofty elevation locations all come from lofty elevations and are, consequently, comparatively resistant to AMS. The research presented here found that it is vital to recognize that this is not the situation and awareness has to be devoted to the porters touring with any given trekking or mountaineering group (Dawadi, Basnyat & Adhikari, 2020; Bellows, 2014). Indeed, it is quite difficult to acquire statistics concerning the deaths of porters/Sherpas when climbing or trekking to high altitudes. The following Table (Table 1 – see below) shows mortality rates for porters/Sherpas, climbers and mountaineers between 1921 to 2006 on Everest. Overall, this research can report that, death rates, particularly for Nepali nationals are underreported and many times, deaths tolls for porters are never recorded.

**Table 1 – Mortality on Everest 1921-2006**



Route	Mountaineers	Death rate during descent from summit (%)	P value*
North	Climbers	3.4	0.0001
	Sherpas	<0.2	
South	Climbers	1.7	0.02
	Sherpas	0.4	
Combined north and south	Climbers	2.5	0.0001
	Sherpas	0.2	
North	Mountaineers	2.0	0.1
South	Mountaineers	1.1	

Source: Firth et al., (2008, p. 1431)

## Methodology

Data was collected from 31 porters undertaking training at a Nepali Porters' training organization, based in Kathmandu, Nepal. The project used semi-structured in-depth interviews to interview the participants on the topic of the 'acute mountain sickness and weight of cargo inconsistencies'. Participants were involved in a 45-60-minute interview, which was recorded in situ. The interviews were semi-structured so that a lot of the questions – or at any rate themes – were prepared ahead of time, but areas of inquiry were followed within the interview, so as to focus on interesting and unexpected possibilities that emerged. The interviews for this study were undertaken in both Nepali and English. Some of the porters preferred and asked to be interviewed in English, so they could practice their language skills with the author and interviewer for improvement purposes when interacting with English speaking trekkers. Some of the interviewees did not feel confident enough to develop an interview in English (at this stage in their training), so they were interviewed in Nepali. All of the porters interviewed were male and ranged from twenty to forty years of age. Throughout all the interviews, a male Nepali interpreter was present in order to help with language nuances, cross-linguistic anomalies and to clear up any misunderstandings regarding the interviews and their purpose. All the interviews were recorded and then transcribed into English (if they were not already in English) by a bilingual Nepali PhD research student. The data was coded using a hierarchical, thematic coding structure approach.

Question triggers that concentrated on length of time as a porter, training undertaken for portering, hours of work and types of articles carried, risk and safety issues, injuries and length of time able to work in this occupation were asked of each participant. Further, basic demographic queries relating to their age and place of birth were also mentioned. All questions were formed through engagement with the literature on porters in Nepal, their health and other relevant issues for working in the Himalayas. However, the dialogues and discussions with the male participants were wide-ranging, exchanges co-produced between the interviewer and participant to inspire the porters to present their own lived experiences of their portering encounters.

## Findings/discussion - results

The local porters in this study were employed by carrying heavy loads for tourists in the mountains. Many of them were attracted to the work because they could be relatively well paid for their short-term hauling duties, rather than the lower returns they would receive if they stayed on the family farm and grew food. Many reported that they were in good health before they went to the mountains, and that they did not suffer from any health problems before going to the mountains. Many porters appeared happy carrying loads for others; but some reported carrying much more than the thirty-kilogram limit prescribed for them. The research studied what the porters carried by weight, and in kilograms. The themes to emerge from the research were AMS and "weight of loads or cargo" in kilograms. In the next section, AMS is discussed first, followed by a subsequent section on carrying of cargo or loads by porters.

### Acute Mountain Sickness (AMS)

The mountaineering, hiking, trekking, rafting, canyoning, bungee jumping and climbing industries, i.e., tourism, are a main source of earnings for Nepal, and the appeal of a higher seasonal wage reward entices many valley dwelling Nepali to toil as porters (Kharel, 2017).

They transport substantial consignments and are frequently inadequately prepared and insufficiently advised of the hazards of high altitude. AMS in climbers and journeying to high altitude continues to be a widespread dilemma (Hillman, 2019; Dubowitz & Miller, 2001; Hackett, Rennie & Levine, 1976) and much investigation has been aimed at its avoidance. Nepali porters are as prone to AMS as climbers and hikers (Hillman, 2019; Basnyat & Litch, 1997), and over the years, it has been found that an excessive frequency of AMS (37%) has been present in non-Sherpa Nepali porters (Hillenbrand et al., 2006; Basnyat & Le Master, 2001).

AMS is the riskiest malaise that can be contracted while travelling in the mountains. When asked about AMS, participant 1 responded that if he felt sick, “I would go down if I feel that sickness”. Participant 12 added that, “I am not feeling that ... because I stay in that kind of area from childhood and do not feel difficulties while trekking”. This is similar to the arguments made by Carod-Artal (2014) in a journal article on high altitude headaches and AMS. But participant 12 also added when asked about AMS that he had:

Heard (of) some other people of different groups feel that kind of situation and some problems like asthma (sic). But their guides are very good and follow precautions before getting those problems. They would already prepare to handle that situation.

Participant 14 related that he sometimes contracted AMS, even though this was due to individual capacity while trekking, and that if he were unlucky enough to fall ill that he would, “had some medicine (sic), garlic soup<sup>3</sup> and go down”. Additionally, when participant 7 was asked if he ever fell ill during a trek, he answered:

I feel weak and some friends have experienced headaches and altitude sickness. My company had guides with first aid trekking and we didn't have any problems. Above 5000 m, I experienced headache and sleeplessness. I used medicines like Paracetamol; and using Diamox may lead to diarrhoea, and my guide asked me to go for garlic soup, enough to eat and sleep.

According to Bellows (2014), and Basnyat and Litch (1997), the occurrence of AMS is influenced by personal predisposition, the altitude attained and the pace of ascent amongst other things. A gradual ascent pace is probably a significant component in the lesser occurrence of AMS. In Hackett et al. 's (1979; 1976) research on the occurrence of AMS in Nepal, participants were recorded as ascending over time frames of between 2 and 14 days. It should also be highlighted to trek managers and medical doctors that not all the Nepali workforce inhabit high altitude locales, predominantly the porters, and are likely to be as predisposed to AMS as Western trekkers (Basnyat & Litch, 1997). The research reported in this article found that many of the porters did experience varying levels of AMS, and most responded to various well known and widely used local and general treatments, such as drinking a lot of water, eating garlic soup; and taking paracetamol and Diamox<sup>4</sup>. Participant 6 also added some interesting facets to the risk of being a porter and related about a time he contracted AMS; and also, what has happened to other porters:

<sup>3</sup> See Koirala, P., Wolpin, S. E., & Peterson, J. T. (2018). *High altitude illness: Knowledge, practice, and attitudes of porters in Nepal. Wilderness & environmental medicine, 29(4), 431-436, for a full discussion regarding the benefits of garlic soup as a remedy for AMS.*

<sup>4</sup> Most Diamox (Acetazolamide) tablets come in 500 mg doses. Taking this twice per day for at least two days before the high-altitude trek begins, during the trek and also on the return journey appears to be a lot of Diamox but is the recommended dose for most people. However, the dosage can be adjusted to suit individual circumstances (see <https://www.rxlist.com/diamox-sequels-drug.htm> for further information on dosages of Diamox).

At that time, I drink a lot of water first and garlic soup and during the day I do not sleep. And going around 100 m up and down. And I go down... I use a lot of Diamox. Sometimes a lot of porters die during trekking. They had many problems. In one season, 5 to 8 porters died. But sometimes very few would die. It is due to altitude sickness and a lot of alcohol drinking. Many Sherpas died during Mt. Everest avalanche. That kind of terrible incident happened in Manaslu too... I have been to Manaslu, Kanchenjunga, Makalu, Everest Base Camp, Langtang and Upper Mustang.

From the research stated here, it can be ascertained that a considerably greater quantity of porters with AMS problems have been evacuated than tourists. These results are comparable with earlier information, which also established a larger quantity of porter evacuations when compared to other staff and tourists (Basnyat & Litch, 1997). When tallied, the data indicate that when porters describe AMS problems, they are more acute than those experienced by tourists (Drew et al., 2011). Thus, high altitude employment (portering) in the Himalaya is conceivably the most precarious of all practices of mountain tourism (Shrestha, 2020; Bott, 2009). The findings of this research regarding porters and AMS can thus be related to the notions of porters wanting to do as many portering trips as possible during the tourist “on season” in Nepal. In turn, this enables them to develop a higher income and more affluent lifestyle. However, it also highlights the fact that their lives are put at risk in order to gain a sturdy and financial status and lifestyle for themselves and their families.

### **Carrying of cargo and loads by porters**

Investigations of the working conditions of porters in Nepal, particularly those who participate in non-qualified trekking tourism external to the Solukhumbu area of Nepal are mainly unaccounted for amongst the tourism literature. Academics who have written about the topic have used Kilimanjaro in Africa as an illustration, where they have recorded significantly risky and unequal working conditions (see Melubo, 2015; Peaty, 2012). When discussing the weight and safety of loads they carried as porters, participant 11 recounted that, “we will carry bandages or some medicines for such emergencies”. Participant 2 also responded, “Normally, I carry bags like trekking bags and backpacks, sometimes but we have to request to get permission to do those things”. Participant 13 also said that he carried “Tourist bags and my own stuff”.

The research on the impediments and facilitators to porter susceptibility to AMS and the weight of loads they are employed to carry, indicates that working conditions for the porters are frequently grim. Regularly conveying burdensome loads with improper equipment, porters have been exposed to severe work-related perils attributable to their physically strenuous occupation in a perilous landscape. Financial arrangements have also aided difficulties; enticements for conveying weightier burdens, provincial price increases, and economic reliance on guides and trekking organisations have all impacted to shape portering into a harsh vocation where wellbeing is forfeited over income (Barott, 2018).

Indeed, when asked about the things he carries as a porter, participant 4 said that “I carried a backpack when being porter (sic) and during the trekking to Nagarkot”. However, when asked the same question, participant 6 added “It’s not heavy, up to 30 kg”. But participant 17 related that “It’s up to 35 kg, but generally less than 30. These are stuff like bags, backpacks and sometimes baskets”. Participant 8 also confirmed this by adding, “It’s backpacks, bags and baskets sometimes”.

Self-regulated exertion is the solution to appreciating the burden haulage capability of the porters. By relaxing regularly and advancing gradually at their own rate, the porters are able to control work strength (cargo and load carrying) and persist within their own physical constraints while achieving duties that a good number of well-built men would be incapable of achieving (Bellows, 2014; Malville, et al., 2001). So, this research supports the notion that porters need to develop personal strategies around the weights they are willing to carry; and also, the physical exertion and energy they are willing to expend working as porters in order to provide a better living standard for their families and themselves.

Many tourists who partake in trekking engage the services of Nepali residents, for instance, local porters. Contrasted with other Nepali staff, porters are frequently from humbler social environments, live at lower altitudes in the “off season”, and are paid lower amounts when compared to guides, for their trekking expertise. Additionally, cultural disparities in illness and ailment communication may mean that international trekkers are less equipped to protect their workers because they are ill informed about medical complications (Barott, 2018; Drew, et al., 2011).

## **Conclusion and implication**

The researcher has shown how Nepali porters live with and sustain health with regards to AMS and load carrying issues while undertaking employment in the mountainous regions of Nepal. Porters are contemporaneously organising themselves and their industry, so that they are no longer vulnerable within the trekking industry. This research will assist in understanding how Nepali porters prevail over their situational health and cargo or load hauling capacities while assisting international tourists and others on treks in the Himalayan regions of Nepal.

Porters who transport loads for tourists are under researched and under recognised for the job they do in Nepal. Their susceptibility to AMS, along with their compliance to carry heavier weights than are permitted are issues that need more research to ascertain discrepancies in these areas. Porters are absent in policy and academic dialogue (Hardwell, 2014). Moreover, it is only after tragedies and natural disasters that porters unite and cooperatively collaborate with policymakers to augment their working conditions and compensation levels (Khadka, 2015). A large number of the participants in this study reported that their health was good, and that they did not struggle with AMS or numerous other injuries. The Nepali porters in this study are perceived as underprivileged uneducated labourers. Contrasted with other Nepali employees, porters are often from unprivileged social environments, live at lower altitudes in the “off season”, and are compensated with minimal pay rates (Barott, 2018; Bellows, 2014). A more sustained recognition of porters would contribute to better health outcomes with regards to AMS, and improved weight carrying ratios for them employed on treks in the Himalayas. Their wellbeing is dependent upon others. If a national policy were implemented regarding their employment circumstances, which could lead to improved reactions to health conditions, such as AMS and lighter loads; then, Nepali porters would experience an overall lifestyle improvement.

## **Limitation**

There were some limitations to the research identified by the author. These included that the research did not really address the fact that porters are poor. A further limitation to the research was the fact that only male porters were interviewed.



## Future research

With regards to future research, the benefit of this research has been to provide data about how Nepali porters manage their susceptibility to AMS and load or cargo weights throughout remote regions in Nepal. The work will add value to the policy debate on these issues in the trekking industry, and Nepal. The data and consequent outcomes will form the basis for a larger project on this area of concern. Including female porters in subsequent studies would also highlight the issues discussed here from an inclusive perspective.

## Final comment

Finally, there is still a considerable vacuum that needs to be examined concerning wisdom about health and load carrying capacity dilemmas in porters. Straightforward worksheet records of porter wellbeing difficulties by the current remote high-elevation health posts would be very beneficial to discern the scope of the dilemma. Rudimentary fundamentals of schooling and improved socioeconomic conditions are needed to progress Porter's improved health outcomes. Trekking organizations and companies need to appreciate and observe dependable trekking.

## References

- Barott, N. (2018). *Uphill Struggle: Impediments and Facilitators to Porter Health in the Khumbu Region*. Independent Study Project (ISP) Collection. 2985. [https://digitalcollections.sit.edu/isp\\_collection/2985](https://digitalcollections.sit.edu/isp_collection/2985)
- Basnyat, B. (2007). Personal communication, April 30, 2007.
- Basnyat, B. & Litch, J.A. (1997). Medical problems of porters and trekkers in the Nepal Himalaya. *Wilderness Environ Med.* (8)78–81.
- Basnyat, B. & Le Master, J. (2001). Risk of altitude sickness in Nepalese porters in the Everest region. *J Inst Med*, 24, 137-143.
- Bellows, I. (2014). Crossroads of the World: Intersections of Power and Privilege in the Khumbu.
- Bista, D. B. (1971). The political innovators of upper Kali-Gandaki. *Man*, 52-60.
- Bott, E. (2009). Big mountain, big name: globalised relations of risk in Himalayan mountaineering. *Journal of Tourism and Cultural Change*, 7(4), 287-301.
- Campbell, B. (1995). A profile of Resources available to His Majesty's Government--Ministry of Health Nepal. *Unpublished document. UNDP, Kathmandu, Nepal.*
- Carod-Artal, F. J. (2014). High-altitude headache and acute mountain sickness. *Neurología (English Edition)*, 29(9), 533-540.
- Dawadi, S., Basnyat, B., & Adhikari, S. (2020). A review of medical problems in Himalayan Porters. *High altitude medicine & biology.* 21,109–113.
- Devkota, U. (1995). The cervical spine of the male Nepali porter. In Paper presented at the Himal "Hard Livelihood: Conference on the Himalayan Porter", Patan, Nepal, August 3–4.
- Dixit, K. M. (1995). The porter's burden. *Himal*, 8, 32–38.
- Drew, C. M., Collieran, S., Zijp, M., Lama, L. P., Sherpa, N. J., Kelly, J. L., Sulzbach, N., Prior, D., Currin, S.A., Currin, S., Nickol, A. H., & Morell, M. J. (2011). Preparation and medical outcomes of Nepalese staff and porters compared with foreign nationals on the Annapurna

- trekking circuit. *High altitude medicine & biology*, 12(4), 349-356.
- Dubowitz, G. & Miller, D. (2001). A reduction in the incidence of acute mountain sickness and high-altitude pulmonary oedema at 4250 m in Nepal. 12th International Hypoxia Symposium, March 10–14, 2001, Jasper, Alberta, Canada [abstract 65]. *High altitude medicine & biology*. 2(1), A65.
- Firth, P., Hui, Z., Windsor, J., Sutherland, A., Imray, C., Moore, G., Semple, J., Roach, R. & Salisbury, R. (2008). Mortality on Mount Everest, 1921-2006: descriptive study. *British Medical Journal*, 11, 1431433.
- Hackett, P., Rennie, D., & Rales, (1979). Peripheral edema, retinal haemorrhage and acute mountain sickness. *Am J Med*, 67, 214-218.
- Hackett, P., Rennie, D., & Levine, R. (1976). The incidence, importance, and prophylaxis of acute mountain sickness. *Lancet*, 2, 1149-1154.
- Hardwell, A. (2014). Service with a Smile: deconstructing the experiences of Nepali expedition workers in the Himalaya. *Being there: Slow, fast, traditional, wild, urban, natural....*, 24-42.
- Hillenbrand, P., Pahari, A., Soon, Y., Subedi, D., Bajracharya, R., Gurung, P., ... & Society, B. (2006). Prevention of acute mountain sickness by acetazolamide in Nepali porters: a double-blind controlled trial. *Wilderness & environmental medicine*, 17(2), 87-93.
- Hillman, W. (2019). Pre-Travel and On-site Medical Adherence and Compliance of Trekkers to Everest Base Camp, TEAM Journal of Hospitality & Tourism, 15(1), 15-28, Malaysia. <https://www.rxlist.com/diamox-sequels-drug.htm>, Accessed 11 March 2021
- Kathmandu Environmental Education Project (KEEP) (n.d.). <https://www.theintrepidfoundation.org/kathmandu-environmental-education-project>, Accessed 10 May 2021.
- Khadka, U. (2015). *Sharing the Burden: Improving the Welfare of Nepal's Mountain Porters* (Doctoral dissertation, Harvard University).
- Kharel, S. (2017). Developing rural tourism business in Nepal: Case study of Mustang district, Nepal. Thesis Centria University of Applied Sciences, Business Management.
- Koirala, P., Wolpin, S., & Peterson, J. (2018). High Altitude Illness: Knowledge, practice, and attitudes of porters in Nepal. *Wilderness & environmental medicine*, 29(4), 431-436.
- Lama, L. (2006). Role of Tourism in Improving Livelihoods of the Porters. [Master Dissertation]. Kathmandu, Nepal: Purbanchal University.
- Law, A. & Rodway, G. (2008). Trekking and climbing in the Solukhumbu District of Nepal: impact on socioeconomic status and health of lowland porters. *Wilderness & Environmental Medicine*, 19(3), 210-217.
- Malville, N. (2005). Bearing the burden: Portage labor as an adaptive response to predictable food deficits in eastern Nepal. *Human Ecology*, 33(3), 419-438.
- Malville, N. (1999). Porters of the eastern hills of Nepal: Body size and load weight. *American Journal of Human Biology*, 11, 1–11.
- Malville, N., Byrnes, W., Lim, H., & Basnyat, R. (2001). Commercial porters of eastern Nepal: Health status, physical work capacity, and energy expenditure. *American Journal of Human Biology*, 13, 44–56.
- Melubo, K. (2015). The working conditions of Wagumu (high altitude porters) on Mt Kilimanjaro. *Mountaineering Tourism*, 285.
- MoTCA. (2020). *Mountaineering in Nepal: Facts & Figures*, MoTCA, Tourism Industry Division,

Government of Nepal, Kathmandu, Nepal.

- Newcomb, L., Sherpa, C., Nickol, A., & Windsor, J. (2011). A comparison of the incidence and understanding of altitude illness between porters and trekkers in the Solu Khumbu Region of Nepal. *Wilderness & environmental medicine*, 22(3), 197-201.
- Parajuli, R. (2009). Awareness and prevalence of acute mountain sickness and prevalence of obstructive airflow limitation among Nepalese porters: A cross-sectional study in Khumbu Valley, Nepal (Master's thesis, The University of Bergen).
- Peaty, D. (2012). Kilimanjaro tourism and what it means for local porters and for the local Environment. *J Ritsumeikan Soc Sci and Humanities*, 4(1), 1-11.
- Shrestha, K. N. (2020). Tourism and Transformation: Changing Livelihood Practices of Mountain Dwellers. *Journal of Tourism and Himalayan Adventures: An International Research Journal*, 2, 57-72. Nepal Mountain Academy, Government of Nepal Ministry of Culture, Tourism & Civil Aviation, Thapa Gaun, Bijulibazar, Kathmandu.
- Shrestha, K. N. (2018a). Tourism Development: Power, Structure and crisis of culture (PhD dissertation), Faculty of Humanities and Social Sciences, Tribhuvan University, Kathmandu, Nepal.
- Shrestha, K. N. (2018b). "Dreams of dollars at high altitude" an anthropological study of porters involved in trekking around the Khumbu region. In Uprety, L. P., Pokharel, B., Rai, J., Dhakal, S. & Singh Lama, M. (eds). Chapter 16, *Contemporary Nepali Social and Cultural Anthropology: A Reader*, Central Department of Anthropology, Tribhuvan University, Kathmandu, Nepal.
- Upadhyaya, P. & Upreti, B. (2008a). Enhancing Women's Participation in Mountain Tourism, Prospects and Challenges. Available: [www.mtnforum.org/rs/ol.cfm](http://www.mtnforum.org/rs/ol.cfm)
- Upadhyaya, P. & Upreti, B. (2008b). Mountain tourism in Nepal: An overview on the sustainable inclusion of local communities. Kathmandu: Mountain forum. Accessed ResearchGate. [https://www.researchgate.net/publication/254201664\\_Mountain\\_tourism\\_in\\_Nepal\\_An\\_overview\\_on\\_the\\_sustainable\\_inclusion\\_of\\_local\\_communities\\_on](https://www.researchgate.net/publication/254201664_Mountain_tourism_in_Nepal_An_overview_on_the_sustainable_inclusion_of_local_communities_on)