

## **‘HIGH PLACES’: SIR EDMUND HILLARY, THE SHERPA AND HEALTH SERVICES IN THE MT EVEREST AREA OF NEPAL**

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In December 1966, a small hospital opened in the remote, mountainous, high-altitude village of Khunde, Nepal (see Map). Its purpose was to provide biomedical services for the approximately three thousand people living in the surrounding four valleys.<sup>2</sup> Although little more than a one-roomed—if well-stocked—clinic with facilities for patients to stay, the hospital offered a wide range of outpatient and inpatient, curative and preventive services. It soon

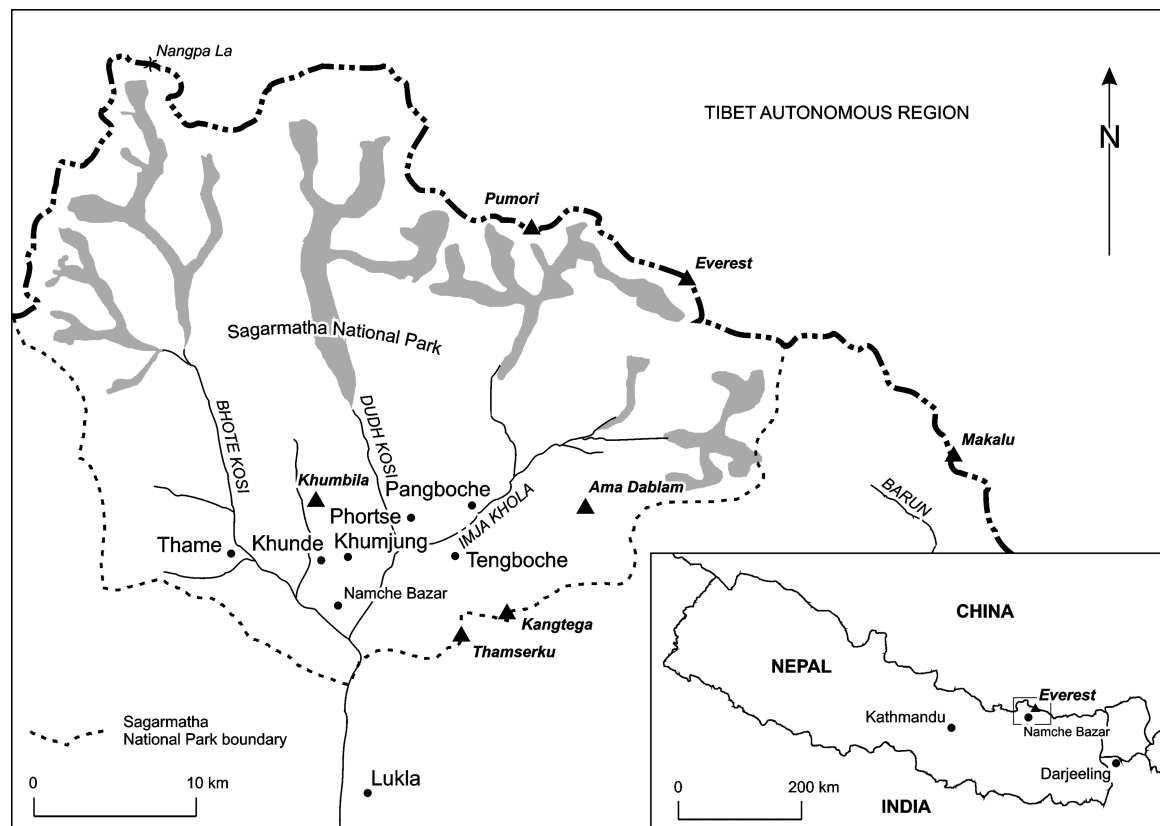
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This article is drawn from my recently completed doctoral study, ‘Modern Medicine and the Sherpa of Khumbu: Exploring the Histories of Khunde Hospital, Nepal 1966-1998’, Ph.D. thesis, University of Otago, 2006, and I would like to acknowledge a University of Otago Publication Award. I would also like to thank the Wellcome Trust for its financial support, which enabled me to present an earlier version of this paper at the ‘History of Altitude Medicine’ conference at the Centre for the History of Science, Technology and Medicine, University of Manchester, England in December 2005. Between 1996 and 1998 I was a volunteer at Khunde Hospital. I would like to thank the Sherpa of the Everest area, Sir Edmund Hillary and members of the Himalayan Trust, and W. F. (Zeke) O’Connor and the Sir Edmund Hillary Foundation of Canada for their considerable assistance during research and writing.

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<sup>2</sup> Khunde Hospital practices what is variously—and often critically—referred to in the literature as Western medicine, modern medicine, cosmopolitan medicine, scientific medicine, biomedicine or allopathic medicine. Multiple names reflect multiple views and unease over terminology. In this article different terms will be used. ‘Western’ best describes the practice of medicine at Khunde, both in terms of medical services and of the establishment of the hospital through Western aid organizations. ‘Biomedicine’ is used in a more general and neutral way to denote the type of medical system, even though it is less familiar in medical practice. Sherpas view this type of medicine as ‘modern’ medicine. In Nepal the term ‘allopathic’ is also often used. Some writers take issue with using the word system, believing that it infers a systemization of beliefs and practices that may not exist. See, Peter Worsley, ‘Non-Western Medical Systems’, *Annual Review of Anthropology*, 11 (1982), 315-48.

became the main provider of biomedical services for the area, a position that it continues to occupy today.



Map of Khumbu.

Three features make Khunde Hospital distinctive. Firstly, the Sherpa, because of their relative accessibility to Western researchers and their association with mountaineering expeditions, have been the most frequently used example of a resident high-altitude population found in the large and geographically isolated Himalayan and Tibetan Plateau region.<sup>3</sup> Information gathered from studies of Sherpas has contributed to knowledge about the physiological effects of high altitude on those who live or visit such areas. It has also been used to compare and contrast with residents of other high-altitude areas, particularly those living in the Andes of South America. Secondly, the hospital is located near Mt Everest, the highest mountain in the world and the centrepiece of a major tourist destination. Thirdly, the hospital's development and ongoing administration was undertaken by New

<sup>3</sup> My discussion of Sherpas and use of the expression 'the Sherpa' is not intended to homogenize the considerable internal and regional variation that existed—and continues to exist—among different groups of Sherpas in Khumbu, Solu or Rolwaling, or further afield in Kathmandu or Darjeeling. In this article I am referring primarily to the Sherpa of Khumbu.

Zealander, Sir Edmund Hillary, who became famous around the world in 1953, when he and Tenzing Norgay were the first to climb Everest.

Although many factors are involved in healthcare issues, in this article I will examine the significant but variable role that the area's high-altitude environment has had—and continues to have—on the provision of medical services at Khunde Hospital.<sup>4</sup> The first section considers the physical and human high-altitude environment of the Mt Everest area and how its Sherpa inhabitants became involved with climbing expeditions and research into the effects of high altitude. The second part discusses how the spectacular mountain environment first drew Hillary to the region and how his short-term relationship with Sherpas during expeditions developed into a long-term association. The remaining two sections examine the different influences that high altitude has had on health services for the permanent residents and visitors to the area.

### **The High-altitude Environment of the Mt Everest Region of Nepal**

Mt Everest straddles the border between the small independent kingdom of Nepal and the Tibet Autonomous Region of China. Until 1950, the Everest region of Nepal was unknown territory for people from Western countries. The Nepalese Government permitted few visits into the country and none to the mountainous Everest region.<sup>5</sup> The valleys of the Dudh Kosi and the Bhote Kosi form a triangular-shaped area of ascending height, in which the small administrative centre of Namche Bazar is the apex, the villages of Khunde and Khumjung the centre and the base is Everest and the other mountains along the border. While the term 'high altitude' does not have a precise medical definition because of the variation in an individual's susceptibility to its effects, it is commonly used to refer to areas above 3000m.<sup>6</sup> All of Khumbu, which is the Sherpa name for this region and the main catchment area of Khunde Hospital, is above this height. The hospital is situated at 3840m.

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<sup>4</sup> For an analysis that considers the significance of 'place', see Susan Heydon, 'Kiwis in Khumbu: Negotiating Landscape and Community at Khunde Hospital', in Tony Ballantyne and Judith A. Bennett, eds., *Landscape/Community: Perspectives from New Zealand History*, Dunedin, 2005, 133-45.

<sup>5</sup> The mapping of the Himalaya in the nineteenth and early twentieth centuries went around Nepal. Kenneth Mason, *Abode of Snow: A History of Himalayan Exploration and Mountaineering*, London, 1955.

<sup>6</sup> It is around this height that 'most lowlanders show unequivocal signs and symptoms associated with the ascent'. Donald Heath and David Reid Williams, *High-Altitude Medicine and Pathology*, London, 1989, 7. Some medical textbooks use the slightly lower height of 2500m. Barometric pressure decreases with altitude which results in a fall in the partial pressure of oxygen.

In 1950, the Chinese intensified their presence in Tibet, shutting the door to Everest for Western mountaineering expeditions that had had only limited access via Tibet after 1920. At the same time, political change in Nepal resulted in an increasing opening up of the country to visitors from other countries. Edmund Hillary, a beekeeper from Auckland who enjoyed climbing in his free time, first visited the southern Nepalese side of the mountain in 1951. Despite the splendour of New Zealand's own mountain environment, he described in awe and excitement the landscape around him. The three days it took from Namche Bazar to the foot of Everest, he wrote, in many senses:

Were the most exciting and dramatic days I had ever spent. The rivers foamed through great gorges; the hillsides were clothed in dense forest, broken only here and there by a sheer rock face or a sharp crag. And then, high above the early autumn tints, towered the unbelievable peaks of the Khumba region—mighty ice-fluted faces, terrific rock buttresses, and razor-sharp jagged ice ridges soaring up to impossible summits.<sup>7</sup>

While the physical landscape is spectacular, it is also harsh. Temperatures are cold, regularly dropping to below freezing in winter at Khunde Hospital, but the principal challenge of the high-altitude environment is hypoxia (the lack of oxygen). Clothing and shelter protect from the cold, but humans require oxygen for survival. As American climber Charles Houston, who was in the first small party of Westerners to visit the Khumbu region in 1950, later wrote, 'on the top of Everest man is at his utmost limits'.<sup>8</sup>

When Hillary and Tenzing set off to climb the final few hundred metres of Mt Everest in 1953, they carried supplemental oxygen to both assist their ascent and because they did not know for certain if humans could survive even a short while at such heights. At these altitudes, the body deteriorates, both mentally and physically. Judgement is impaired. Sleep becomes difficult, food unappealing and the 'physical effort of raising one foot above the other requires half a dozen breaths before the climber has

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<sup>7</sup> Edmund Hillary, *High Adventure*, London, 1957 [1955], 44. Sherpa is a dialect of spoken Tibetan. Although a considerable volume of literature exists about the Sherpa, there is no agreed convention for writing the Sherpa language. Authors render Sherpa words phonetically and may also take into account the meaning of the word. Khunde is often spelt as Kunde. Pronunciation has also changed since the 1960s, particularly in terms of names of places and people.

<sup>8</sup> Charles S. Houston, *Going High: The Story of Man and Altitude*, Burlington, Vermont, 1980, 1.

enough energy to take the next step'.<sup>9</sup> At Everest Base Camp (around 5200m), there is more oxygen for the body to use, but effectively only half the amount that there is at sea level. At Khunde Hospital, the ratio becomes two-thirds, but still not enough for the body to function as it does at sea level.

Like Hillary, the mountain peaks that towered above Khumbu were Tenzing's 'high places', his 'home' and 'where I belong'.<sup>10</sup> Although born in the Kharta valley of Tibet, Tenzing grew up in Khumbu. While visitors struggle with the rigours of this mountainous environment the local inhabitants are acclimatized—or more accurately adapted—to living at such altitude.<sup>11</sup> The human body adjusts to the challenges of the physical environment. The Sherpa preferred their home over the warm valleys of the hills and lowland Nepal where they justifiably feared illness. Malaria, for example, a serious hazard for expeditions travelling through the low-altitude Tarai region, was notably absent from Khumbu.

The Sherpa are an ethnically Tibetan people who came over the mountain passes of the Himalaya in the early sixteenth century into what was then an uninhabited area.<sup>12</sup> People who consider themselves to be, or are recognised by others to be, Sherpa inhabit a large part of the area between the Sun Kosi and Arun rivers in eastern Nepal, but the largest concentration of Sherpas is found in Solukhumbu District.<sup>13</sup> Sherpas constitute less than 1% of the population of Nepal.<sup>14</sup> The name Sherpa, or *sharwa* as the Sherpa call themselves, means 'Easterner' and comes from two words, *shar* meaning east and *wa* or *pa* meaning people.<sup>15</sup> In the eighteenth century, the area became

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<sup>9</sup> L. V. Bryant, *New Zealanders and Everest*, Wellington, 1953, 15. Bryant, a New Zealander, was a member of the 1935 British Mt Everest Expedition.

<sup>10</sup> Tenzing Norgay (told to) James Ramsey Ullman, *Man of Everest: The Autobiography of Tenzing*, London, 1956 [1955], 26.

<sup>11</sup> The term 'acclimatization' has a physiological explanation in high-altitude medicine. In discussions about race and climate it often reflected moral judgments of the 'other'. See, for example, David N. Livingstone, 'Human Acclimatization: Perspectives on a Contested Field of Inquiry in Science, Medicine and Geography', *History of Science*, 25 (1987), 359-94.

<sup>12</sup> While considerable attention has been devoted to the question of ethnicity there is no consensus among scholars regarding definition of this complex concept. The broad definition of an ethnic group that I have used is that of people sharing a cultural heritage who are viewed by themselves and others as distinctive. See, Frank N. Magill, ed., *Survey of Social Science*, II, Pasadena, California, 1994, 689. Self-definition is particularly relevant in terms of a population census on which assessments of the Sherpa population are based.

<sup>13</sup> Stanley Stevens, *Claiming the High Ground: Sherpas, Subsistence and Environmental Change in the Highest Himalaya*, Delhi, 1996 [1993], 35-37. The centre of the district is in the lower Solu area.

<sup>14</sup> Central Bureau of Statistics, *Statistical Year Book of Nepal 2001*, Kathmandu, 2001, 12, 52. These figures are taken from the 1991 population census that recorded 110,358 Sherpas and a total Nepalese population of 18,491,097.

<sup>15</sup> It is uncertain as to what is meant by 'east' in this context.

incorporated into the Gorkha kingdom that now forms the modern state of Nepal.<sup>16</sup> The new rulers were Hindu while the Sherpa, like a number of small groups living along the Himalaya, were Buddhist. Both their geographically remote and—for most other people—undesirable location, as well as their marginal social and political position in Nepal meant that apart from the payment of taxes Sherpas in Khumbu were largely left alone.<sup>17</sup> Few government officials visited.

Khumbu Sherpas lived in a series of permanent villages and temporary settlements and largely managed their own affairs.<sup>18</sup> The six main villages of Namche Bazar, Khumjung, Khunde, Thame, Phortse and Pangboche occupied some of the few reasonably flat areas at 3400–4000m. Before the 1950s, Sherpa livelihood relied on agriculture and pastoralism. In the twentieth-century, the potato became the staple food, while yaks supplied many other needs.<sup>19</sup> With the area located on a long-distance route between northern India and Tibet, trade supplemented this subsistence economy.<sup>20</sup>

The fame of the Sherpa, however, was not built upon the way of life they shared with other mountain peoples living along the border.<sup>21</sup> Their international reputation was initially earned outside both Khumbu and Nepal. Like many other Nepalese, Sherpas sought an alternative to a subsistence lifestyle by leaving Khumbu, either temporarily or permanently.<sup>22</sup> Darjeeling, a hill station in British India, proved a popular Sherpa destination, with the first district census of 1901 recording 3450 resident Sherpas.<sup>23</sup> They found employment in a variety of occupations, but in the first half of the twentieth century Darjeeling became an important recruitment centre for Sherpas accompanying mountaineering expeditions in the Himalaya.<sup>24</sup> On

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<sup>16</sup> See, particularly, Richard Burghart, 'The Formation of the Concept of Nation-State in Nepal', *Journal of Asian Studies* 14, 1 (November 1984), 101-25.

<sup>17</sup> Stevens, *Claiming the High Ground*, 53-4.

<sup>18</sup> Christoph von Fürer-Haimendorf, *The Sherpas of Nepal: Buddhist Highlanders*, London, 1964, 100. Although there are many academic and popular studies of the Sherpa from the 1950s, Fürer-Haimendorf's book was the first academic study and remains the broadest account.

<sup>19</sup> It is commonly thought that the potato was introduced into Khumbu during the second half of the nineteenth century. Stevens, *Claiming the High Ground*, 217.

<sup>20</sup> For Sherpa trading before and after 1950, see Stevens, *Claiming the High Ground*, 335-55. For a broader discussion see Wim van Spengen, *Tibetan Border Worlds: A Geohistorical Analysis of Trade and Traders*, London, 2000.

<sup>21</sup> For a description of the different groups in Nepal, see Dor Bahadur Bista, *People of Nepal*, Kathmandu, 1972 [1967]. Also, see Don Funnell and Romola Parish, *Mountain Environments and Communities*, London, 2001.

<sup>22</sup> For the importance of temporary and permanent migration in Nepal's population growth in the hill regions, see Mark Poffenberger, *Patterns of Change in the Nepal Himalaya*, Boulder, Colorado, 1980, 57-66.

<sup>23</sup> Arthur Jules Dash, *Darjeeling*, Alipore, Bengal, 1947, 72. This total would have included Sherpas from various areas.

<sup>24</sup> Sherpas also crossed directly into Tibet and joined the 1922 British Everest expedition.

these expeditions, Sherpas earned their reputation as valuable high-altitude support personnel. They were willing and able to work under such taxing conditions and were commonly considered cheerful companions.<sup>25</sup> The name Sherpa thus became synonymous with their occupation on the expeditions.<sup>26</sup> Success on Everest in 1953 made Sherpas famous worldwide. Other Westerners soon became fascinated by the Sherpa.<sup>27</sup> The continued closure of Tibet to foreign researchers until the 1980s, also made the accessibility of the culturally Tibetan groups of Nepal, such as the Sherpa, attractive to researchers.

The high-altitude Sherpas of medical textbook and research studies are those that live in—or came from—the higher and more remote Khumbu area near Khunde Hospital.<sup>28</sup> The main focus on Sherpas as research subjects has been in terms of their adaptation to the hypoxic environment when compared with populations from lowland areas or other high-altitude regions. So effectively were high-altitude residents able to cope with their environment that in South America the concept of a distinctive biological 'high-altitude man' emerged in the 1930s as a reaction by scientists there to the images of inferiority presented by Western physiologists.<sup>29</sup> Little was known, however, about high-altitude populations outside the Andes, but in the 1960s, Sherpas were included in such research. Many studies of high-altitude groups around the world took place during the decade following the establishment in 1964 of the International Biological Programme. At the time, many researchers believed that, given the world's rapidly expanding human population, better scientific understanding of the environment was necessary in order to more effectively manage natural resources. Part of the programme concerned the adaptability of human populations to different conditions, hence interest, for example, in those people who lived in high-altitude regions.<sup>30</sup>

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<sup>25</sup> The role of Sherpas in expeditions is described in many accounts, but for a Sherpa-centred analysis, see Sherry B. Ortner, *Life and Death on Mt. Everest: Sherpas and Himalayan Mountaineering*, New Delhi, 2000 [1999]. For a comparison of Sherpas with guides in the European Alps, see Peter H. Hansen, 'Partners: Guides and Sherpas in the Alps and Himalayas, 1850s–1950s', in Jás Elsner and Joan-Pau Rubiés, eds., *Voyages and Visions: Towards a Cultural History of Travel*, London, 1999, 210–31.

<sup>26</sup> This has led to confusion. In this article, Sherpa only refers to the ethnic group and not to the occupational category.

<sup>27</sup> See, Vincanne Adams, *Tigers of the Snow and Other Virtual Sherpas: An Ethnography of Himalayan Encounters*, Princeton, 1996. Hillary did not idealise the Sherpas. The Gurkhas of the British and Indian armies are another group from Nepal with a favourable, high international profile, but unlike the Sherpa come from a number of different ethnic groups from a wide area of the hill region. See Lionel Caplan, *Warrior Gentlemen: 'Gurkhas' in the Western Imagination*, Providence, 1995.

<sup>28</sup> Sherpas living at lower altitudes, such as at Kalimpong near Darjeeling and Kathmandu, are used in studies to compare and contrast with highland Sherpas.

<sup>29</sup> Jorge Lossio, 'Altitude medicine and physiology', *Wellcome History*, 29 (Summer, 2005), 9; Heath and Williams, *High-Altitude Medicine and Pathology*, 332–3.

<sup>30</sup> See, P. T. Baker, ed., *The Biology of High-Altitude Peoples*, Cambridge, 1978.

Research revealed that, although similarities existed between Sherpas and the inhabitants of the Andes, points of contrast distinguished the various groups. Sherpas, for instance, had lower haemoglobin levels than those in the Andes. Researchers thought that Sherpas had to some extent adapted better to their hypoxic environment than those of the Andes, a theory related both to the greater length of time that Sherpas have lived at high altitude and genetic isolation.<sup>31</sup> Given that adjustment to life at high altitude is a complex process, involving most systems of the body, research conclusions remain tentative. One major problem relating to such research occurs when scientists are faced with attributing changes to a variety of causes, from the high-altitude environment or to racial, nutritional and economic factors. The effects of poor nutrition and chronic hypoxia, for example, are similar on growth and development. The more general view reached by present researchers is that there is no generic 'high-altitude man', but rather different groups of people whose characteristics are the result of the interaction between genetic and various environmental influences.<sup>32</sup>

### **Sir Edmund Hillary and Khunde Hospital**

Although high altitude physiological research took place on Hillary's expeditions in the 1950s and 1960s, Hillary established Khunde Hospital in response to the lack of Western style medical services in the area.<sup>33</sup> The use of biomedicine had expanded very slowly within Nepal from the second half of the nineteenth century, but little has been written yet about this historical development.<sup>34</sup> Biomedicine was seen in terms of being 'modern' medicine, and was supported by the Government alongside Ayurvedic medicine—rather than instead of, as was the case at the time in India.<sup>35</sup> The Nepalese

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<sup>31</sup> Susan Niermeyer, Stacy Zamudio and Lorna G. Moore, 'The People', in Thomas F. Hornbein and Robert B. Schoene, eds., *High Altitude: An Exploration of Human Adaptation*, New York, 2001, 43-100. See also I. G. Pawson, 'Growth and development in high altitude populations: a review of Ethiopian, Peruvian, and Nepalese studies', *Proceedings of the Royal Society of London*, B. 194 (1976), 83-98; Amitabha Basu, Ranjan Gupta and Sanat K. Bhattacharya, 'Altitude and Biology in the Sherpa: an Alternative Approach to the Study of High Altitude Biology in the Context of the Eastern Himalayan Situation', *Journal of the Indian Anthropological Society* (Calcutta), 14 (1979), 139-48.

<sup>32</sup> Michael P. Ward, James S. Milledge and John B. West, *High Altitude Medicine and Physiology*, 3<sup>rd</sup> ed., London, 2000, 203.

<sup>33</sup> Heydon, 'Modern Medicine and the Sherpa of Khumbu', ch.1. Despite its small size, it has always been known as a hospital.

<sup>34</sup> See Hemang Dixit, *The Quest for Health: The Health Services of Nepal*, Kathmandu, 1995 and Heydon, 'Modern Medicine and the Sherpa of Khumbu', ch.3.

<sup>35</sup> Biomedicine was not necessarily seen as superior. The Government of Nepal established the Department of Health Services in 1933, which was to be responsible for



Government provided most biomedical services, but these were very limited, especially in rural areas, which, in 1961, contained 96.4% of the population.<sup>36</sup> Following the opening up of the country after the fall of the Rana regime in 1951, the government gradually expanded its health services. Also in this period, medical visitors from other countries came to Nepal and observed, treated and wrote about their experiences, while international aid agencies and non-government organisations (NGOs) arrived to promote and assist with the development of the country. As one of the world's poorest countries, Nepal was a prime target for their activities, but progress was slow and constraints many.<sup>37</sup> Trained personnel were few in number, the terrain rugged, the means of travel and communication often difficult and slow, and information scanty. Initial optimism gave way to frustration. Furthermore, apart from an increasing number of climbing expeditions, few people were interested in the remote Everest area and so it remained isolated from official aid and development activity. At a time of international tensions between India and China and China's intensified presence within Tibet, the Nepalese Government was more concerned with the geopolitical implications of the area's location near its northern border with Tibet than the provision of social services.

Like others, Hillary considered biomedical services to be superior to other systems. From his visits to the area and conversations with Sherpas he learned about health issues that affected Sherpas. These included high childhood and maternal mortality and many cases of tuberculosis, images that contrasted strongly with the outside world's perceptions of the exotic mountain environments of the remote Himalaya.<sup>38</sup> In *Schoolhouse in the Clouds*, an account of the 1963 Himalayan Schoolhouse Expedition, Hillary articulated his views about the health problems of the local people he had encountered. 'It is commonly accepted', wrote Hillary, 'that the isolated mountain valleys of the Himalayas are Shangri-Las where there is no sickness and people live on forever. Such, alas,' he continued, 'is not the case—or certainly not in the various Himalayan regions I have visited'.<sup>39</sup>

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the promotion, regulation and management of government facilities, and included both Western and Ayurvedic systems. By this time, Ayurvedic medicine was being officially recognized in colonial Ceylon. India followed.

<sup>36</sup> Harka Gurung, *Nepal: Social Demography and Expressions*, Kathmandu, 2001, 9.

<sup>37</sup> Heydon, 'Modern Medicine and the Sherpa of Khumbu', ch.4. Much has been written about international aid and development in Nepal. For this early period, see Eugene Bramer Mihaly, *Foreign Aid and Politics in Nepal: A Case Study*, 2<sup>nd</sup> ed., Lalitpur, Nepal, 2002 [1965]; Ludwig F. Stiller and Ram Prakash Yadav, *Planning For People*, Kathmandu, 1993 [1978].

<sup>38</sup> See, for example, the classic novel by James Hilton, *Lost Horizon*, London, 1933. For a broad discussion about the creation and power of different types of images, see Thierry Dodin and Heinz Räther, eds., *Imagining Tibet: Perceptions, Projections & Fantasies*, Boston, Massachusetts, 2001.

<sup>39</sup> Sir Edmund Hillary, *Schoolhouse in the Clouds*, London, 1964, 100.

This expedition represented a major change in direction for Hillary. Following his climbing success on Everest in 1953, his life began to revolve around a mixture of lecture tours, his family, writing, a little beekeeping and a lot of adventure. In 1954, he led a New Zealand Alpine Club expedition east of Everest to the Barun Valley, and in 1955–1958 was involved with the Commonwealth Trans-Antarctic Expedition, controversially leading the New Zealand team to the South Pole by tractor. In 1960–61, he returned to Nepal with a multi-purpose expedition that aimed to look for the yeti, conduct physiological research into high-altitude acclimatization and attempt without supplemental oxygen to climb Makalu, the world's fifth highest mountain. It was on this expedition that Hillary decided to do something to help the Sherpa who he believed had given so much to mountaineering. The change of direction would help channel some of Hillary's restless energy, draw on his developing organizational skills and require the determination that helped him get to the top of Everest. It would also fundamentally alter the focus of Hillary's life. At the end of the expedition, in June 1961, and at their request, Hillary built the Sherpa a school in Khumjung, the largest village in Khumbu.

As an integral part of climbing the world's highest mountains, the high-altitude environment had drawn Hillary to the area in the first place. Now it nurtured a close and enduring partnership with Sherpas, a contrast to the top-down approach of most international aid at this time. Initially, Hillary did not envisage the wide-ranging and long-term involvement that developed.<sup>40</sup> He began to spend several months each year in the country planning, organizing, meeting officials and undertaking new projects, as well as supporting and supervising his growing aid programme. The involvement continued outside these visits with preparation, fund-raising in New Zealand and overseas, public engagements and writing. His capacity for hard work was enormous, but others helped. Although Hillary and his team became incorporated as the Sherpa Trust Board in 1966 (from 1971, the Himalayan Trust Board), it functioned largely as an informal group of friends, family and associates with its office in Hillary's Auckland home. Throughout, Hillary's particular vision of helping others suffused the whole programme.

Between 1961 and 1966, Hillary constructed further schools, bridges, and an airstrip, improved water supplies and provided short-term medical care. Himalayan expeditions had built up a tradition of treating the sick and were an important means by which Western medicine was introduced and spread in the wider region.<sup>41</sup> Such medical assistance, however, was a short-

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<sup>40</sup> Edmund Hillary, *Nothing Venture, Nothing Win*, London, 1975, 251; interview with Sir Edmund Hillary, Kathmandu, April 1997.

<sup>41</sup> The many accounts written about these expeditions frequently refer to treating the sick. Given the lack of biomedical services in these areas and the consequent lack of archival sources, visitors' accounts provide an important avenue for information. For the introduction and spread of Western medicine in the Himalayan region in the late

term response to health problems that presented to the expedition. While local people usually carried little luggage when they travelled, visitors from other countries were more heavily laden, as they often were required to take with them everything they might require whilst on their journey. A medical kit thus formed an essential part of an expedition's supplies and was used to treat its members and employees. In areas with no roads, a large expedition could have hundreds of porters to carry its belongings. As it passed through a district, and particularly when it stopped to camp, some of the local inhabitants would also approach the visitors for treatment of various illnesses.

Although in 1964, the Nepalese Government established a small clinic in Namche Bazar, the administrative centre of Khumbu, the introduction and spread in the Everest area of what Nepalese continued to view as modern medicine was associated primarily with mountaineering expeditions and particularly Hillary.<sup>42</sup> While visitors commonly assumed that biomedicine was the only form of health care in existence, Hillary knew that people had their own beliefs and practices, and attributed a supernatural reason to most ill health.<sup>43</sup> To Hillary's way of thinking, this was understandable because the Sherpa lacked 'medical knowledge'.<sup>44</sup> On his own expeditions, he saw how local people sought medical care from the foreigners and benefited from their medicines and the expertise of the doctors. In 1963, as well as treating individual patients with a variety of conditions, expedition members also

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nineteenth and early twentieth centuries, see Alex McKay, 'The Birth of a Clinic'? The IMS Dispensary in Gyantse (Tibet), 1904-1910', *Medical History*, 49 (2005), 135-54; 'British-Indian Medical Service Officers in Bhutan, 1905-1947: A Historical Outline', in Karma Ura and Sonam Kinga, eds., *The Spider and the Piglet: Proceedings of the First International Seminar on Bhutan Studies*, Thimphu, Bhutan, 2004, 137-59. <[www.bhutanstudies.org.bt/publications/spdr-pglt/spdr-pglt.htm](http://www.bhutanstudies.org.bt/publications/spdr-pglt/spdr-pglt.htm)>

<sup>42</sup> While on an expedition, sick Sherpa were treated with Western medicines and procedures, and some assisted a Western doctor. Situated close to the border, the clinic at Namche Bazar was under the authority of the Home Ministry rather than the Department of Health Services. The limited government services in rural and remote districts throughout Nepal, the lack of military involvement in health issues and the absence of Christian missionaries in Nepal until the 1950s indicate that these were not likely to be the routes for the introduction of biomedicine into an area such as Khumbu. Sherpa travelled extensively, both for trade and religious purposes, but appear to have carried and bought their traditional medicines.

<sup>43</sup> Hillary, *Schoolhouse in the Clouds*, 111. Anthropologists have described extensively Sherpa beliefs and practices which continue to remain important when dealing with ill health. See, Vincanne Adams, 'Healing Buddhas and Mountain Guides: The Production of Self Within Society Through Medication', Ph.D. thesis, University of California, Berkeley, 1989; John Draper, 'Beyond Medicine: Sickness, Healing, and Order in Sherpa Society', PhD thesis, University of Sydney, 1995. For a summary, see Heydon, 'Modern Medicine and the Sherpa of Khumbu', ch.2.

<sup>44</sup> Hillary, *Schoolhouse in the Clouds*, 111.

gave hundreds of smallpox vaccinations during what turned out to be the last major epidemic of smallpox in Nepal.<sup>45</sup>

By this time Hillary was thinking in terms of the long-term need to meet the lack of biomedical facilities in Khumbu. He recognised the ‘great need for a small hospital in the Khumbu region’. He envisaged that, initially, ‘one doctor and a dozen beds would probably be enough’ to meet people’s needs.

It would then be possible for really sick people to come from the surrounding villages for treatment and stay in the hospital without depleting their small store of money in paying for accommodation. It would also be feasible to initiate and supervise health schemes such as the introduction of iodine, regular vaccinations and so on. I can think of no more satisfying task for a doctor than a couple of years spent working among these fine mountain people.<sup>46</sup>

In late 1963, Hillary approached the Nepalese Government for permission to open a small hospital in Khumjung, but, uncertain about the project’s funding, he decided not to proceed with it in his application for an expedition in 1964.<sup>47</sup> As well as climbing and offering the more usual expedition general medical care to the local population, this new expedition continued the smallpox vaccination started the previous year and began work amongst some of the Khumjung schoolchildren on a prophylactic programme to combat iodine deficiency diseases.<sup>48</sup> The expedition saw iodine deficiency as the biggest public health problem confronting the area.<sup>49</sup> Such activities both promoted biomedicine and continued its association in the Khumbu context with Western travellers. Hillary’s expedition also built an airstrip at Lukla, which would greatly facilitate the transport of building materials and supplies for the hospital, shortening the journey from a seventeen-day walk to an approximately one-hour flight and a two-day carry by porters.

Khunde Hospital became Hillary’s biggest project at the time. In October 1965, Hillary wrote to the Department of External Affairs in Wellington, enclosing his application to the Nepalese Government for

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<sup>45</sup> Susan Heydon, ‘Smallpox in the Mountains: The 1963 Epidemic in the Mount Everest region of Nepal’. <<http://www.smallpoxhistory.ucl.ac.uk>>

<sup>46</sup> Hillary, *Schoolhouse in the Clouds*, 112.

<sup>47</sup> Hillary to Ian McIntosh, 21 January 1964 and McIntosh to Bishwa Pradhan, Royal Nepalese Embassy, New Delhi, 31 January 1964, Himalayan Climbing Expeditions & Schoolhouse Project ABHS 6949 W4628 NDI 64/14/2 Part 2 [Archives New Zealand/Te Whare Tohu Tuhituhinga O Aotearoa, Head Office, Wellington, hereafter ANZ].

<sup>48</sup> Max Pearl, ‘Kiwi in the Khumbu’, *New Zealand Medical Journal*, 64 (October 1965), 584-8. Pearl was the expedition doctor.

<sup>49</sup> Sherpas had a different understanding of the issue. An angry *lu* (spirit) was one explanation of ill health.

approval to build a small hospital at Khunde, planned to take place between September–December, 1966.<sup>50</sup> Also included were three petitions from the local village councils in support of his proposal.<sup>51</sup> Hillary still had substantial sums of money to raise and he estimated that the hospital and first year's running costs would be £15,000.<sup>52</sup> As Hillary was unsuccessful in persuading the New Zealand Government to support the project under the Colombo Plan, he had to look for alternative sources of funding. Hillary's role was pivotal in securing the necessary sponsorship, not only to build the hospital but also to ensure its ongoing support.<sup>53</sup>

In March 1966, Hillary received approval from the Nepalese Government to build the hospital, although he was unhappy about their proposed customs duties.<sup>54</sup> The expedition, however, proceeded as planned and built the hospital in six weeks during the northern autumn of 1966 with most of the materials and hospital supplies being brought in from overseas.<sup>55</sup> The official opening of the hospital was held on 18 December 1966.<sup>56</sup> Ten days later, Hillary left the area and the hospital in the hands of New Zealand's Volunteer Service Abroad (VSA) volunteers, Dr. John McKinnon and his wife, Diane.

### **Sherpas, Health Services and High Altitude**

Despite the high-altitude research interest in the area's Sherpa residents, Khunde Hospital was charged with providing a range of basic curative and preventive health services.<sup>57</sup> The main single-storey building contained a

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<sup>50</sup> Hillary to McIntosh, 15 October 1965, Himalayan Climbing Expeditions & Schoolhouse Projects ABHS 6949 W4628 NDI 64/14/2 Part 3 [ANZ].

<sup>51</sup> These are referred to in the files, but the originals were forwarded with the proposal and have not been viewed by the author. Petitions from local people became a recognized part of the local ritual of asking for assistance.

<sup>52</sup> Hillary, 'New Zealand Hospital for the Sherpas', 22 October 1965, Himalayan Climbing Expeditions & Schoolhouse Projects ABHS 6949 W4628 NDI 64/14/2 Part 3 [ANZ].

<sup>53</sup> Hillary to McIntosh, 13 September 1963, Himalayan Climbing Expeditions & Schoolhouse Projects ABHS 6949 W4628 NDI 64/14/2 Part 2 [ANZ]. The Colombo Plan came into operation in 1951 and aimed to stimulate development in the Asian region through capital aid and technical assistance.

<sup>54</sup> Shardul S. Rana, Joint Secretary, Ministry of Foreign Affairs, to Hillary, 22 March 1966, Himalayan Climbing Expeditions & Schoolhouse Projects ABHS 6949 W4628 NDI 64/14/2 Part 3 [ANZ].

<sup>55</sup> Brian Ahern, 'A Hospital for Kunde', *New Zealand Alpine Journal*, 22, 1 (1967), 13-19; interview with Neville Wooderson, Khunde, April 1998.

<sup>56</sup> Louise Hillary, *A Yak for Christmas*, Garden City, New York, 1969, 91-97.

<sup>57</sup> For a discussion of how the hospital's services were used and the continued importance of Sherpa beliefs and practices, see Susan Heydon, 'Sherpa Beliefs and Western Medicine: Providing Health Care at Khunde Hospital, Nepal', in Mona Schrempf, ed., *Soundings in Tibetan Medicine: Historical and Anthropological Perspectives. Proceedings of the 10th*

one-room clinic in which most examinations, investigations and treatments were carried out. An adjacent room provided inpatient facilities for acute cases. A separate building initially provided eight beds for tuberculosis patients, but was later used more generally for patients requiring a long-term stay at the hospital. Although an extra room was added as a classroom at one end of the main building and a bedroom in the volunteers' flat at the other, the long-stay accommodation rebuilt and internal reorganization carried out, Khunde Hospital still looks remarkably as it did in 1966.

In the 1960s, Khumbu was isolated within Nepal. While part of the history of Khunde Hospital concerns the slow expansion of Nepalese Government health services and the hospital's gradual integration into its programmes, the hospital has operated independently as a private aid project. Such independence allowed flexibility in coping with the challenges of providing health services in a difficult environment. Khunde Hospital was supported and administered primarily from New Zealand, by Hillary's Himalayan Trust under a renewable Agreement with the Nepalese Government. Funds for Hillary's aid work came from a variety of private and official sources, including from the mid-1970s the Sir Edmund Hillary Foundation (SEHF) in Canada and the Canadian International Development Agency (CIDA).

In 1966, as Nepal had few doctors or other trained health workers, the Nepalese Government gave Hillary permission to bring in foreign medical staff. These were volunteers who went to work and live at Khunde for around two years. Initially all staff came from New Zealand, but by the early 1980s volunteer appointments began to alternate between New Zealand and Canada. For much of the period the volunteers were the only foreigners living in Khumbu on a year-round basis. They were supported by a small number of local staff, some of who lived at the hospital and shared the kitchen with the volunteers. Close bonds often developed between them, with the local Sherpa staff guiding the volunteers about living and working in a Sherpa community.

Outpatient and inpatient registers from the hospital show that, although situated at high altitude, the hospital's work reflected the health challenges arising from the low socio-economic status of the population.<sup>58</sup> Hospital staff saw and treated most people as outpatients. Between 1967 and 1997, the number of outpatients increased from an annual total of 1924 to 7294.<sup>59</sup>

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*Seminar of the International Association for Tibetan Studies, Oxford, September 2003, Leiden, forthcoming; Heydon, 'Modern Medicine and the Sherpa of Khumbu', chs. 2, 3.*

<sup>58</sup> Throughout Nepal, including mountainous areas, the access to safe drinking water is limited. In Khumbu both the quality and the lack of water for some villages are issues.

<sup>59</sup> Outpatient totals are calculated from the patient registers and annual reports. There are problems with using these figures because of the varying periods of time covered by the

While the commonest presenting conditions were respiratory, gastrointestinal and skin problems, on any one day the medical staff might have to respond to minor coughs and colds, major problems such as tuberculosis, serious trauma or an obstetric complication, acute and chronic illness, common and rare conditions, or novel cases such as a sick or injured yak. The main preventive health programmes were immunization, family planning and controlling the effects of the region's iodine deficiency. Staff also encouraged antenatal care for women and carried out health education activities.

From the beginning, the issue of the hospital's accessibility was important. Khumbu has no roads, and so both staff and patients had to—and continue to have to—walk everywhere. Seriously ill patients were carried to the hospital, usually by another person rather than on an animal, and hospital staff made home visits and travelled out to the villages. To improve access and further encourage use of the hospital's services, the volunteers began to train health workers and develop village-based services so that people could receive basic health care, both curative and preventive, closer to where they lived.<sup>60</sup>

While the rugged terrain had a major impact on the provision of health services, Khumbu's high altitude further influenced health issues for the local population.<sup>61</sup> Although Khumbu is situated near the Equator, the cold temperatures of this high-altitude region are an almost constant feature of life. Such an environment, however, can be protective. As noted earlier, there are no mosquitoes in Khumbu. The high level of ultraviolet from increased solar radiation also inhibits the growth of some bacteria while the number of bacteria in ambient air decreases with altitude.<sup>62</sup> In common with other mountainous areas—although not confined to high altitude—the soil is deficient in iodine, but the treatment and preventive use of iodized oil injections, introduced following research in the area in 1966 by a New Zealand team led by Dr. H. Kaye Ibbertson, reduced the problem of iodine deficiency disorders by the early 1990s from the level of 'severe' to 'mild'.<sup>63</sup> Nevertheless, throughout the world's high-altitude regions few systematic studies have been carried out on the influence of hypoxia in relation to most

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reports, changing criteria and the different interests of both the writers and those to whom the reports were addressed.

<sup>60</sup> J. R. McKinnon, 'Health Problems of Khumbu in Nepal: the work at the Kunde Hospital', *New Zealand Medical Journal*, 67 (1968), 140-43.

<sup>61</sup> Ward, Milledge and West, *High Altitude Medicine and Physiology*, ch.17 and passim.

<sup>62</sup> *Ibid.*, 211.

<sup>63</sup> David R. Murdoch, Elizabeth G. Harding and John T. Dunn, 'Persistence of iodine deficiency 25 years after initial correction efforts in the Khumbu region of Nepal', *New Zealand Medical Journal*, 112, 1092 (23 July 1999), 266-68.

illness; findings, on the whole, thus remain speculative.<sup>64</sup> Such research, however, is also difficult to carry out in isolated areas, such as Khumbu, where facilities and demographic data are limited, and people use multiple health systems.

One aspect of health where more studies have been carried out concerns the influence of high altitude on fertility, pregnancy and childbirth, which contributes to low birth weight, increased complications during pregnancy and higher mortality rates. Current research on childbirth suggests that altitude is an independent variable that acts separately from socio-economic influences.<sup>65</sup> A recent study from Ladakh, in the western Himalaya, reported low birth weight and a high neonatal (first month) mortality rate. While Ladakhi women share many affinities with those in other Himalayan communities, Andrea Wiley has suggested that the perceptions of risk from high altitude during pregnancy and childbirth are considered part of the reason why women in this area predominantly use biomedical services for antenatal care and childbirth.<sup>66</sup> This contrasts with other groups in the Himalayan region, including Khumbu where over 70% of deliveries still occur at home, with assistance from the hospital being sought when there are problems.<sup>67</sup> This pattern was established at an early stage. Furthermore, despite being available from Khunde Hospital staff and encouraged from the beginning, local women's use of antenatal care only significantly increased in the 1990s. In Khumbu, Sherpas have used—or not used—biomedical services for various reasons, but perceptions of increased risk from the region's high altitude do not appear to explain patterns of resort. A 1991 review, however, of the records of over 150 babies delivered by Khunde Hospital staff since 1976 found a higher average birth weight for Sherpa babies and a low rate of obstetric complications.<sup>68</sup> Hospital staff

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<sup>64</sup> No systematic study has been conducted on whether high altitude aggravates pre-existing health conditions. High altitude may increase the mortality of those with lung disease who remain at high altitude. Lorna Grindlay Moore, 'Altitude-Aggravated Illness: Examples From Pregnancy and Prenatal Life', *Annals of Emergency Medicine*, 16 (9 September, 1987), 965/73-973/81.

<sup>65</sup> For example, see Gwenn M. Jensen and Lorna G. Moore, 'The Effect of High Altitude and Other Risk Factors on Birthweight: Independent or Interactive Effects?', *American Journal of Public Health*, 87, 6 (June, 1997), 1003-7.

<sup>66</sup> Andrea S. Wiley, *An Ecology of High-Altitude Infancy: A Biocultural Perspective*, Cambridge, 2004 and 'Increasing use of prenatal care in Ladakh (India): the roles of ecological and cultural factors', *Social Science & Medicine*, 55 (2002), 1089-1102. She also believed that the presence of a respected female obstetrician at Leh Hospital was an important factor in encouraging women to use biomedical services.

<sup>67</sup> Draft Demographic Survey Summary Report, June 2003. I am grateful to Dr. Kami Temba Sherpa, medical officer in charge of Khunde Hospital since 2002, for allowing me to see the provisional findings.

<sup>68</sup> Kunde Hospital Annual Report. 1 June 1991 to 31 May 1992. Obstetric records were consistently available from 1976.



considered Sherpa pregnancies similar to Tibetan, both being less affected by high altitude than those of other ethnic groups.<sup>69</sup>

One often overlooked aspect of medical practice at high altitude is its influence on equipment and procedures. Ensuring a regular supply of oxygen for sick patients has proved difficult for staff at Khunde Hospital. In the early years some oxygen was obtained from expeditions, an alternative to the lengthy procedure of sending cylinders to India to be filled. At times the hospital had no oxygen. In 1990, the hospital obtained a portable pressure bag. To use, the sick person is placed inside, the bag zipped up and by means of a foot pump the pressure is raised to simulate a lower altitude. The arrival of electricity in November 1994 made a significant difference to the supply of oxygen, because at the end of 1996 the hospital received an oxygen concentrator. This machine enabled oxygen to be supplied to patients whenever necessary, rather than having to be rationed in case a more serious patient came in. It also rendered unnecessary the hours and monotony of pumping the pressure bag.<sup>70</sup>

High altitude also affects the operation of some equipment. The hospital continues to steam-sterilize most equipment in a household pressure cooker on the stove in the hospital kitchen, using sterilizing bags obtained from New Zealand. Staff know the process is successful when the tape on the bag containing the item of equipment turns brown. With the arrival of electricity it was hoped to improve this domestic system, but in 1997 hospital staff were unable to source a small enough sterilizer, suitable for Khunde Hospital's needs, that would be guaranteed to work effectively at such high altitude.<sup>71</sup> In another example, the recent appearance of diabetes among the Sherpa raises concerns regarding altitude and glucose measurement, because the level of oxygen in the atmosphere affects readings.<sup>72</sup> Those obtained at high altitude differ from those at sea level.

Lastly, the increased movement of Sherpas between areas of high and low altitude raises some additional health issues. Although Khumbu Sherpas are adapted to living at high altitude, this does not mean that Sherpas do not suffer from altitude sickness. Mountaineering accounts contain many examples of these cases, which tended to occur at higher altitudes than the Khumbu villages and which in some cases resulted in Sherpa deaths. Official statistics are not available because deaths among the local population are not

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<sup>69</sup> Also see, Chery Smith, 'The Effect of Maternal Nutritional Variables on Birthweight Outcomes of Infants Born to Sherpa Women at Low and High Altitudes in Nepal', *American Journal of Human Biology*, 9 (1997), 751-63. Non-Sherpa babies born at Khunde Hospital had an average lower birth weight, more closely equating to the Nepalese average of around 2500g.

<sup>70</sup> This was particularly an issue overnight when the person pumping could easily fall asleep.

<sup>71</sup> Personal participation.

<sup>72</sup> Personal communication, Dr. John Heydon, November 2005.

registered. Most also occur away from the hospital. Between 1985 and 1987, however, staff at Khunde Hospital listed known deaths in the area in the annual reports.<sup>73</sup> Amongst these, a man was believed to have died from altitude sickness following an Everest expedition and a one-year old child was also thought to have died of altitude sickness in the higher Gokyo valley when her family returned from Kathmandu. It is unlikely that this was the only death of a young child returning to altitude. Aside from the problems of under- or non-reporting, diagnosing altitude sickness in very young children can be difficult when symptoms are often vague. Recently the hospital had a case where a baby was born in Khumbu, spent eight months in Kathmandu, and then returned to Khumbu.<sup>74</sup> She was unwell, brought up to the hospital and admitted. In the absence of another diagnosis, she was treated as having altitude sickness, recovered after a few days and went home.

### Visitors to the Mt Everest Region

While most patients at Khunde Hospital have come from the resident, predominantly Sherpa, population, the movement of people within Nepal and throughout the wider Himalayan region has become commonplace. People from other ethnic groups came into Khumbu and some became patients at the hospital, presenting with a wide range of health problems including those related to high altitude.

The main route from Tibet is the high glacial pass of the Nangpa La (5716m), which remains in use for both trade and refugees.<sup>75</sup> Tibetan patients at Khunde Hospital were high-altitude residents like the Sherpa and coped with the hypoxia, but some medical problems such as snow blindness, sore lips, sprains, fractures and frostbite reflected the hazards of their high-altitude journey.<sup>76</sup>

With the growth of tourism and economic development of Khumbu, changing demographics and increased use of biomedicine, the number of non-Sherpa Nepalese patients has increased considerably over the last forty years. In January–June 1967 they constituted 5% of the total outpatient consultations.<sup>77</sup> In 1997, this proportion was 29.3% of outpatient

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<sup>73</sup> Kunde Hospital Annual Reports. 1 August 1985–31 July 1986; 1 August 1986–31 July 1987.

<sup>74</sup> Personal participation during a six-week locum at Khunde Hospital in December 2001.

<sup>75</sup> Thousands of refugees came over the pass after the intensification of Chinese presence in Tibet in 1959, but had moved on or returned to Tibet by the time the hospital opened at the end of 1966. Until recently this border area was closed to tourists. The area's promotion today as a transboundary conservation area is likely to result in increasing tourism in the future.

<sup>76</sup> Patients at Khunde Hospital coming from Tibet can be identified in the hospital registers.

<sup>77</sup> Outpatient register, 1967.

consultations.<sup>78</sup> Foreign interest focuses on the Sherpa and little is known about the health issues or the effects of altitude on Nepalese from other ethnic groups. In a 1993 paper, however, over a 21-month period Khunde Hospital doctors treated 24 cases of altitude-related illness among Nepalese.<sup>79</sup> Of these patients, 79% were employed in the tourism industry, the army or by the Government. Long-term residents acclimatized to the high altitude, but most porters were short-term visitors and often experienced problems. Doctors diagnosed a number of patients who suffered from the effects of altitude, all of whom responded to treatment through medication, rest, descent or use of a portable pressure bag. Such cases at the hospital, however, represented only a small fraction of the Nepalese in the area actually suffering from altitude illness. Hospital staff learned of three Nepalese who died of probable altitude illness, but none were seen by anyone from the hospital.<sup>80</sup>

Overseas visitors from low-altitude areas have had the most impact on health services at Khunde Hospital. In 1964, there were just 20 visitors to the area.<sup>81</sup> From the mid-1970s, the Everest region (from 1976, the Sagarmatha National Park) became one of Nepal's principal tourist destinations, attracting most visitors during the spring and autumn trekking seasons. In 1997, 17,412 tourists visited the area.<sup>82</sup> Most experienced some form of sickness, with conditions ranging from the relatively minor inconvenience of the common cold to those that could be fatal.<sup>83</sup> Tourists tended to self-treat, be treated by their group or another visitor, or seek help from a health facility. While the Himalayan Rescue Association has run a medical post since the 1970s, at the village of Pheriche (4243m) during the trekking

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<sup>78</sup> Kunde Hospital and Village Clinics. Annual Report 1997.

<sup>79</sup> David Murdoch and Lynley Cook, 'Altitude Illness in Nepalis', *Journal of the Nepal Medical Association*, 31 (July-September, 1993), 288-92. This paper was presented at the International Conference on the Role of General Practitioners in Developing Countries, Kathmandu, 1-4 February 1993.

<sup>80</sup> Porters may have been treated by their trekking group, while some people would have improved without treatment and others would have gone to traditional healers. Some porters died along the track. In the 1950s lowland porters were discharged at Namche Bazar and so did not travel as high as those in the survey period.

<sup>81</sup> Barbara Brower, *Sherpa of Khumbu: People, Livestock and Landscape*, Delhi, 1992 [1991]), 67.

<sup>82</sup> Kunde Hospital and Village Clinics, Annual Report 1997, Appendix 5, Khunde Hospital. These figures were compiled from various sources. Also see Stevens, *Claiming the High Ground*, 362. The Sagarmatha National Park was established in 1976 and has kept a record of the number of visitors. These figures do not include the support staff which has been estimated to be in a ratio of between 1.7 to 3 for each foreign tourist. Brower, *Sherpa of Khumbu*, 68.

<sup>83</sup> David R. Murdoch, 'Symptoms of Infection and Altitude Illness Among Hikers in the Mount Everest Region of Nepal', *Aviation, Space, and Environmental Medicine* (February 1995), 148-51. Murdoch's study of 283 hikers found that 87% had symptoms of infection. Murdoch was a volunteer doctor at Khunde Hospital at the time of his study in 1991-92.

seasons, Khunde Hospital has provided year-round services. The increasing number of outpatient consultations at the hospital has reflected the rising number of visitors. In 1967, there were just three tourist consultations, but by 1996 the number had increased to 265 (3.7% of total consultations).<sup>84</sup> Inpatient figures presented another profile. Of the 178 tourist admissions between October 1970 and December 1997 (8% of the Hospital's total number of admissions), 72 were for altitude sickness.<sup>85</sup>

Hypoxia is the most pervasive factor influencing the health of visitors in the Everest region. While the whole region is at a high altitude, popular trekker destinations are located at over 5000m. The volunteer doctor at Khunde Hospital in 1968-69, Richard Evans, recorded that, during a 16-month period, 800 tourists visited the area, of which eight had severe altitude sickness and two died without medical help.<sup>86</sup> International research on travellers in Khumbu has contributed to advancing knowledge about the effects of high altitude on non-resident populations and has shown the extent of the problem for the Everest region. A seminal paper published in the *Lancet* in 1976 found that 53% of those investigated exhibited symptoms of altitude sickness.<sup>87</sup>

The higher people go and the faster the rate of ascent, the more likely they are to develop altitude sickness, with problems ranging from a mild headache to death. Those patients at Khunde Hospital, who were normally resident at low altitude, presented with the range of symptoms that constitute altitude sickness. The ones who were admitted to hospital represented the serious end of the spectrum. Since the 1960s, the overall rate in the region of severe altitude sickness has declined.<sup>88</sup> At that time visitors were warned about the effects of high altitude and what to do if someone became seriously sick.<sup>89</sup> The present emphasis on prevention is a more recent development

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<sup>84</sup> Kunde Hospital and Village Clinics, Annual Report 1996, Khunde Hospital. Overseas patients in practice occupied more staff time than the numbers suggest.

<sup>85</sup> Twenty-six were for respiratory problems, 24 for gastro-intestinal complaints, 21 for trauma and 35 for other causes.

<sup>86</sup> Hillary Hospital Report, [August] to 12 December 1969, Khunde Hospital. The top of the page is torn.

<sup>87</sup> P. H. Hackett, D. Rennie and H. D. Levine, 'The Incidence, Importance, and Prophylaxis of Acute Mountain Sickness', *Lancet*, ii (1976), 1149-54. The study was based on the Himalayan Rescue Association medical post at Pheriche which under Dr. Peter Hackett had a strong research focus.

<sup>88</sup> Personal communication, Professor David Murdoch, June 2004. See, also, John B. West, *High Life: A History of High-Altitude Physiology and Medicine*, New York, 1998, 384-85; Charles S. Houston, *Going High: The Story of Man and Altitude*, Boston, 1987, 179. West describes an overall reduction in altitude sickness, while Murdoch emphasizes the decline in severe altitude sickness.

<sup>89</sup> Hillary Hospital Report, [August] to 12 December 1969.

dating from the late 1970s.<sup>90</sup> Severe altitude sickness is largely preventable, and the best way to cope with the high-altitude conditions of the Everest area is to employ a conservative rate of ascent, stop if one is feeling unwell and descend if one's health does not improve. The problem with the Everest area is that it remains difficult to descend easily to a safe altitude. Treatment with oxygen or a portable pressure bag and medications then assume greater importance.

Tourists bring in medicines to treat themselves, but they will also give these to local people when they perceive a need. While the tradition of providing medical care to local people had arisen particularly in response to the lack of biomedical services, increasing numbers of climbing expeditions and trekkers (walkers) to the Everest area have continued to provide medicines and ad hoc treatment to local people.<sup>91</sup> Medicine was—and is—given and used in good faith, but this practice has created some problems. From the hospital's perspective as the main provider of services, the peak period of concern was from the mid-1970s to the early 1980s. This period saw the establishment of the Sagarmatha National Park, World Bank interest in regional tourism, and several other doctors operating in the area.<sup>92</sup> Although this last group mainly researched the effects of high altitude, doctors at the hospital became concerned about the fragmentation of health care, continuity for patients with chronic illnesses, people not using the permanent services and the lack of medical knowledge of the trekkers and indeed some of the visiting doctors.<sup>93</sup> For example, the area has had a lot of cases of tuberculosis, and monitoring completion of treatment has been difficult at the best of times without the additional issue of other groups providing medical care.

Another concern for hospital staff involved the raising of expectations. Khunde Hospital was generally well equipped and supplied, but remained oriented towards providing basic medical services.<sup>94</sup> Visiting doctors sometimes saw patients and then referred them to the hospital with a note requesting a test or medicine that the hospital did not have, thus risking a lowering of the standing of the hospital to patients.<sup>95</sup> A related dilemma was that local people knew that visitors carried medicines for their personal use.

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<sup>90</sup> Personal communication, Murdoch, 2004. The education promoted by the Himalayan Rescue Association began this development. West, *High Life*, 384.

<sup>91</sup> Such assistance peaks in the spring and autumn when most visitors come to the area.

<sup>92</sup> See, for example, Dr. Rob Riley's 'Report of Khumbu Medical Services Meeting', held at the Everest View Hotel on 4 May 1977.

<sup>93</sup> This is well documented in the correspondence files at Khunde Hospital.

<sup>94</sup> Kunde Hospital Handbook, vol. 1, revised by Drs. Elly Kroef and Keith Buswell, February 1985, no page numbers.

<sup>95</sup> Personal communication, Dr. John Heydon, June 2004. A person's perception of efficacy in the hospital's treatment remains a key reason influencing Sherpa use of Khunde Hospital.

The World Health Organization (WHO) recommends—and not only for a country with limited resources such as Nepal—the use of oral fluids for rehydration in cases of uncomplicated diarrhoea, which is very common among both local people and visitors. Visitors, however, carry medicines, including potent antibiotics that can considerably speed up recovery from an unpleasant condition. Not surprisingly local people would also request these.<sup>96</sup>

## Conclusion

Many factors influence health issues and the provision of health services. Much ill health in Nepal and the limited biomedical services available to most of the population reflect Nepal's status as one of the world's poorest countries, but in the Everest region the high-altitude environment has also been—and continues to be—a significant factor. High altitude has different effects on the health of those who are permanent residents in these areas and those who visit but normally live at lower altitude. The unique environment of the Everest region has also impacted on the provision of health services. For forty years Khunde Hospital has been the main provider of biomedical services in this area, but without Everest and Hillary it would neither have been built nor would it have been maintained, providing the high level of services that it has given and continues to offer to the people who live near the world's highest mountain.

Most patients at Khunde Hospital are the resident Sherpa who were famous for their role in Himalayan mountaineering expeditions, but in terms of high-altitude medicine became research subjects when the focus for many studies shifted to the Himalayan region in the 1960s. The 'high places' were their home, but findings about their adaptability to the hypoxic environment also contrasted with groups in the Andes. While much of the hospital's medical work among Sherpas in Khumbu was not caused by the area's high-altitude, it did affect equipment and procedures. This is often overlooked yet has a widespread effect on biomedical practice. Other groups also used the hospital. Tibetans were similarly adapted to the hypoxia, but those from lower altitudes in Nepal suffered from altitude sickness as did the increasing number of overseas visitors. An emphasis on prevention has reduced the amount of severe altitude sickness in the area, but most admissions of tourist inpatients are still for altitude-related problems.

The Everest area has changed considerably since the arrival of the first Western visitors in 1950. The influx of foreigners drawn to the high-altitude physical and cultural environment has underpinned the economic

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<sup>96</sup> Personal communication, Heydon, 2004.

development of the region. This contrasts with other areas and the Sherpa are thankful. For those providing health services, however, the presence of a large number of visitors has also created tensions regarding medical treatment of the local population, continuity of care and the raising of expectations. Tourism, health and high altitude in the Everest area are thus inextricably entwined.