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# Health on the Move: Health-seeking behavior of Changpa nomads in Ladakh, India

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# Health on the Move: *Health-seeking behavior of Changpa nomads in Ladakh, India*



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*Photo of a man walking beside wild horses*

## Abstract

The goal of this study is to understand the health-seeking behavior of Changpa nomads in the Changthang region of Ladakh, India including what health issues these communities face, what they do when they fall sick, any preventative health behavior they implement, as well as the health infrastructure available to them. Very little literature exists on the health seeking-behavior of people in South Asia in general, much less among non-dominant lifestyles such as that of nomadic or semi-nomadic people. As such, this research hopes to move towards closing that knowledge gap by conducting and analyzing 26 in-depth semi-structured interviews and participant observations regarding health issues and health behavior with people who live in semi-nomadic communities, staff at local sub centers and PHCs, government officials, and NGO workers in Leh. Main findings include a prevalence of “small diseases” such the common cold, likely caused by over-prescription of antibiotics, increasing recognition of cancer as a result of unhealthy diet, poor oral health due to water contamination, and the occurrence of excessive professional and self-referrals to Leh causing a patient overload at the District Hospital. Ultimately the research takes a community-based approach to understand health issues and identify the strengths and deficiencies of health care systems in the region to help stakeholders move towards implementing positive interventions that can help ensure a high quality of life among Changpa communities.





*Photo of a shepherdess from the Chushul nomadic camp beginning a long day of herding goats through the valley.*

## Methods and Limitations

The researcher traveled to five communities in the Changthang region of Ladakh: Satho and Parma (two villages in Kargyam), Phobrang village, Chushul village, and the Chushul nomadic camps. The researcher traveled with a co-researcher from Phobrang village who has contacts in all of the visited sites and is familiar with the dialect of Ladakhi spoken by Changpa communities. The researcher and co-researcher lived with homestays in each location. The two main methods that this study implemented are semi-structured interviews and participant observation. In total 26 participants were interviewed including villagers who used to herd animals, current shepherds, government officials, allopathic medical center staff, and NGO workers. Participants were selected with a convenience sampling method, however the researcher did manage to speak with a range of demographics including current and former male and female shepherds of ages ranging from 21 to 77. The co-researcher translated all of the interviews from Ladakhi to English. The interviews took place in a variety of locations including participant homes and valley pastures with the participant's herds. All of the participants were informed of the academic nature of the research and were either provided with a pseudonym or remained anonymous to protect confidentiality. If the participant agreed, the researcher took a photo to include as part of a profile. There is no standardized measure for assessing health-seeking behavior therefore the researcher compiled potentially applicable questions from previous studies relating to health-seeking behavior among various populations (see interview guide in the appendix).

This research aimed to conduct a broad survey of health issues and health resources among Changpa semi-nomadic communities,. As this research aimed to *begin* to close the knowledge gap, the researcher hopes future studies will aim to develop more in-depth analyses of the topics covered here. Furthermore, due to the short amount of time available to conduct in-person interviews and the fact that the communities visited for this research are new to tourism, the researcher struggled to build rapport and get participants to speak openly about health, which can be a very personal topic. However, with the help of a local co-researcher, it is safe to assume that participants willingly shared key insights that can be of use to future research.





*Photo of co-researcher Dadul walking off into the desert to find cell service to call for a tow truck.*

## Acknowledgements

First and foremost I would like to express the utmost gratitude to my co-researcher, Dadul, for being an incredible guide, translator, and problem solver throughout the ups and downs that inevitably occur while on excursion in Changthang, including (but not limited to) walking off into the desert horizon to find cell service when we got stuck in the mud and driving back to Leh to help sort out complications with the local authorities. I would also like to thank the women of the Ladakhi Women's Travel Company who welcomed me into Leh, lent me a sim card that would function in Changthang, and showed me around local monasteries. Thank you to all of my homestay families in Changthang and especially Lamo and her family in Leh who constantly reminded me to laugh and eat more servings of food. Thank you to my fellow SIT companion in Ladakh, Margaret Pulte, for helping me through particularly rough moments and for inviting me along to interviews and tourist excursions when I hit road blocks in my own research. I also would like to thank the owners and employees of Lehvenda Café in Leh and Caravan Café in Boudha for letting me camp out for several days while I analyzed and compiled my research. Finally, I would like to thank the SIT staff and Lhamo Yangchen, my ISP advisor, for inspiring and helping me to produce thorough and ethical research.



# A STORY OF THE LANDSCAPE 1/5

## Moon Landing

When the wing of the airplane dips to begin a steep banking maneuver, the dry, rocky terrain surrounding Leh city immediately makes passengers feel that they are about to land on the moon. The pilot takes the plane for a lap around Leh city to prepare for an optimal landing. Meanwhile, passengers crane their necks to look out the windows and catch glimpses of brown buildings nestled together, forming villages sitting just below snow capped sandy mountains. Bare trees reach for the sky, desperate for sunlight and warmth in the cold mountain climate. Together, the villages and the trees represent the only signs of life in this high altitude desert. One of the cabin crew makes a landing announcement, advising passengers to hydrate and take time to acclimate to the altitude before engaging in any tourist activities. The announcement affirms the geographic extremity of the terrain that the passengers are about to enter, as if the visibly stark and dramatic views from the plane window weren't convincing enough.

*Photo of Leh City.*



## A Brief Introduction to Ladakh

### *Geography, History, and Economy*

Ladakh is a high altitude region in the state of Jammu and Kashmir in northern India that borders southwestern China. The Leh District of Ladakh stretches across 45,110 km<sup>2</sup> and has a population of 133,487. The altitude of the district ranges from 2,900 to 5,900 meters (9,500 to 19,300 feet) above sea level.<sup>2</sup> Leh is one of the largest geographic districts in the country and is one of the highest inhabited regions in the world.<sup>3</sup>

In the 19<sup>th</sup> and early 20<sup>th</sup> Centuries Ladakh lay along the Silk Road trade route connecting markets in Central and South Asia to Eastern Europe.<sup>4</sup> The local Ladakhi economy and livelihoods thus depended on trading key commodities as part of this international route. Ladakhi pastoralists traditionally took their flocks through pastures near and even across the Sino-India border to collect salt and wool that they could bring back to Leh to trade for barley, a critical food for both humans and herds of goat and sheep.

However, in the mid-20<sup>th</sup> Century, tensions between China and India escalated in part due to their ill-defined Himalayan border and the countries' desires to expand. Historic trade networks were interrupted by border disputes with Pakistan and China beginning in the 1940s. After the Sino-Indian War of 1962 and subsequent wars with Pakistan, India closed its northern borders, completely cutting off traditional trade networks.<sup>4</sup> In their research on socioeconomic changes in Changthang, Namgail et al. asserts that "traditional bartering of several subsistence commodities, such as barley, has also ceased."<sup>5</sup> Similarly, in her ethnographic works on trade in Ladakh, Jacqueline Fewkes says, "Previously a part of global networks, Ladakh became an isolated border area as national boundaries were defined and enforced in the mid-20<sup>th</sup> century."<sup>6</sup>

The closing of India's northern border not only cut off trade routes, but also traditional pastoral grazing routes. The previously open border allowed shepherds from Ladakh and Tibet alike to access a variety of pastures. In addition to a decreased amount of land available to Ladakhi shepherds following the closing of the border, an influx of Tibetan refugees with herds of their own added strain to the environment. Pastoral nomads had to implement more regulated grazing patterns due to increased number of people and animals in a newly decreased region available for grazing.<sup>5,7</sup>





Roadside signs sponsored by the Border Roads Organization to promote safe driving practices.



Tourism in Ladakh. Graph taken from the Economic Review of Leh District 2014- 2015. <sup>8</sup>

The Indian army has an overwhelming presence in Ladakh with posts strategically placed beside what seems like every road in the area. The army provides countless job opportunities for locals, creating livelihood options beyond traditional agricultural and pastoral livelihoods. Exact data on the number of army bases and employed individuals is not available likely for security reasons. Tied into the army operations is a movement to expand accessibility in the Ladakh region via the construction of roads. In particular, the Border Roads Organization (BRO) Project HIMANK work, which began in 1985, aims to ensure accessibility to critical military bases as well as historic battleground sites. This is the project responsible for constructing the world's second highest motorable road, Changla Pass, which allows easy access into the Changthang region. <sup>9</sup>

While the army and road construction labor are two recently developed job opportunities for Ladakhi locals, a third major contributor to the livelihood shift away from traditional agriculture and pastoralism is tourism. Ladakh officially opened to tourism in 1974 and "has allowed people to profit easily, which has drawn young people toward business and away from the fields." <sup>10</sup> Since then, the number of tourists arriving in Ladakh has increased annually, with a sharp spike in domestic tourists following the release of the 3 Idiots movie, which features a scene at Changthang's Pangong Lake, in 2009 (see graph above). <sup>8</sup>

These development and livelihood changes in the region have coincided with rapid urbanization. In the early 2000s Leh city had one of highest urban growth rates in India.<sup>7</sup> Notably, nomadic populations of Ladakh are among those moving to Leh from rural areas.<sup>7</sup> In her research on Tibetan nomads in Changthang, Helena Groves points out that "a push for education and literacy is sending many nomadic children to far-away schools, putting extra strain on the family at home."<sup>11</sup> Sarah Goodall examines Changpa responses to recent changes including increasing education. As families increasingly choose to send their children to schools, particularly in urban centers such as Leh and New Delhi, Goodall argues that "an awareness of facilities available in the urban area has also helped to foster a sense of relative deprivation among the nomadic pastoral communities."<sup>7</sup> Similarly, Sophia Marion's work on the health of women in Leh states that development "brought the concept of a need for money in order to survive" compared to historic subsistence livelihoods including agriculture and pastoralism sufficing for families.<sup>10</sup> As a result of these shifts in mentality, very few children return home to help their families with large herds of hundreds of goats and sheep. The lack of manpower to tend to the animals results in older generations selling off their livestock when they are no longer fit to take them into the mountains to graze. Only a few younger nomadic and semi-nomadic shepherds continue pastoral lifestyles in rural areas like Chushul because they were chosen to help their parents with the family herding work instead of going to school.

# A STORY OF THE LANDSCAPE 2/5

## Changla Pass

Driving southeast of Leh towards Changthang, one hardly recognizes the gradual transition from urban to rural desert. The landscapes have the ability to lull first-time travelers into a mindless state, watching the sandy, snow-covered mountains slowly pass by. The roads are, for the most part, are wonderfully paved with seemingly fresh black tar making for an easy drive through the valley and up the mountain pass. Stretches of dirt roads occasionally break up the black tar, however even those provide minimal discomfort to car passengers. As the car climbs up Changla pass, snow and ice from the mountainside increasingly seep onto the roads eventually creating a fully snow covered path with distinct tracks carved out from trucks and cars making the journey. Army outposts mark the side of the pass at strategic intervals, and army trucks decked with chain wheels and loaded with supplies and soldiers regularly depart creating a long line of slow moving traffic. Regular cars do their best to skirt around the caravan but sometimes crawling behind the trucks can't be helped. At 17,000 feet an army truck brakes down creating a traffic jam in both directions. Drivers take the opportunity to stretch their legs while their tourist passengers jump out of the car to have photo shoots with chunks of snow they can pick up from the side of the road. After about an hour the truck resumes operation and the traffic slowly moves onwards. Just when travelers think they are in the clear, another jam forms at the very top of the mountain pass at the ice covered military base. A taxi driver gets out of his car and starts yelling at the army men for blocking both sides of the road with their trucks, leaving no room for traffic to pass. A brawl nearly breaks out. A high ranking officer, however, steps in just in time to find a peaceful solution. Another half an hour later the army trucks creep forward opening up a narrow passage for traffic. With that, a journey through the second highest road passage in the world is complete. The iced over roads fade back into smooth black tar and slightly bumpy (but still relatively nice) dirt stretches. With more military check points, a couple of small towns offering tea and snacks, many breathtaking mountains, and snaking rivers littered with herds of sheep and yak, travelers can be easily lulled back into a sense of calm awe as they pass through Changthang.



*Photo of Changla Pass  
taken at 17,660 feet.*



# Changthang and Changpa Communities

Changthang can be translated as “high plateau” or “northern plain” and the term ‘Changpa’ refers to the people of the high plateau or northern plain. In this paper ‘Changpa’ will refer specifically to nomadic communities in Changthang who have lived in the region for generations and whose ancestors migrated from Tibet around the 8<sup>th</sup> Century.<sup>5</sup> Though Ladakh has significant populations of both Buddhists and Muslims, the Changpa are largely Buddhist.<sup>5,12</sup> In certain regions of Changthang there are also settlements of nomadic and semi-nomadic Tibetan refugees who brought herds of their own across the closed border when China occupied Tibet. These Tibetan nomads are

sometimes referred to as ‘Drokpa.’<sup>11</sup> Some confusion with the term ‘Changpa’ exists, as its translation is a relative term.

While the majority of the inhabitants of Changthang, whose ancestors migrated from Tibet, accept this term to apply to themselves, some might say that those who live even farther north or at even higher altitudes (in other words, the Tibetans) are the Changpa people.<sup>13</sup> However, this paper will proceed to use ‘Changpa’ to refer to those nomadic communities who have lived in Changthang for several generations.

Nomadic communities have historically been romanticized. Many people hold a common misconception that nomads are “untouched by modern technology and western medicine.”<sup>11</sup> Tourists who trek to visit these nomadic people are often disappointed by the “spoiled communities” who do in fact have jeeps, televisions, and gas stoves.<sup>5,11</sup> Changpa nomads traditionally used horses to move camps, but with an increase of roads in the region, many families have sold their horses and replaced them with jeeps. Traditionally, Changpa families had hundreds of goats, sheep, and yak, and they would divide their herds among family members to be herded. However, as interest in pastoral livelihoods among younger generations wanes, older shepherds have been selling portions of their herd to reduce the size to a manageable number of animals that they can care for alone. As mentioned above, these older shepherds often end up selling their entire herd once they are no longer fit for the demanding and active lifestyle required to move herds through the mountains.

The pashmina from the Changthang goats has become famous for its high quality. Pashmina has thus developed as a primary source of income for many pastoralists in Ladakh as well as for settled families who earn their income from selling pashmina products in tourist areas. The government of India has shown considerable interest in the industry and has invested in several programs to promote pastoralism. Namgail et al. states, “India and the Ladakh Autonomous Hill Development Council are making a concerted effort to increase the cashmere production in Changthang through provision of enhanced veterinary care, assured supply of feed for severe winters, and by providing improved livestock breeds.”<sup>5</sup> The Department of Sheep Husbandry aims to address “the concerns of food and nutritional security, sustainable employment and the preservation of Ladakh’s traditional identity” by establishing 70 animal health care centers, providing nutrient supplements (barley, fodder, and pelleted feed), and even compensation for lost



Map of Leh District including Leh city and Changla Pass (top left), and two landmark lakes in the Changthang region.<sup>14</sup>



*Discarded government-provided medicine packaging found in a Chushul nomadic camp.*

herds due to animal attacks and strong weather.<sup>5,15</sup> Livestock medicine and vaccinations are available to pastoralists at 50-70% subsidy, bringing common livestock diseases such as foot and mouth disease and caprine pleuro-pneumonia under control.<sup>5</sup> The department also provides subsidies for constructing small stone houses in traditional grazing pastures so that shepherds have a safer establishment to live in while caring for their animals.<sup>15</sup> Furthermore, regional developments including the increase in roads has allowed Changpa pastoralists to cut out the middle-man in pashmina trade and take their products to market themselves.<sup>5</sup>

There are an estimated 50-100 million nomads and semi-nomads in the world, 60% of which live in Africa. As a result, literature regarding nomadic populations and specifically their health and health-seeking behavior largely refers to populations in African nations such as Chad, Nigeria, Sudan, and Uganda. For example, several papers on nomadic populations in sub-Saharan Africa cite disproportionate vulnerability to health issues such as infectious diseases including Malaria, TB, Guinea

Worm, and other parasites. Furthermore, a significant barrier to health care facing these nomadic communities is their social and political differences from settled populations. Okeibunor et al. and Sani Aliou discuss previous attempts at implementing health interventions among nomadic communities in sub-Saharan Africa.<sup>16-18</sup> For example, Aliou comments on the ineffectiveness of “independent mobile health units” intended to move according to the patterns of nomadic populations. He instead argues that expanding fixed health infrastructure so that there are medical posts in every district would be sufficient to also cover the needs of nomadic populations.<sup>17</sup>

Similar literature is lacking for nomadic populations in South Asia, including the Changpa nomads of Changthang. The first step to improving, or helping to maintain, the health of this marginalized population is to generate a knowledge base about what issues they face and what they do when they get sick. As Okeibunor et al. put it: “past efforts to provide health interventions for nomads have proved to be costly and sometimes ineffectual due largely to limited availability of demographic and medical data of nomads.”<sup>16</sup> Interventions to help rural communities rarely ask the target population what they actually need and instead incorporate urban biases and assumptions.<sup>10</sup> Groves learned that “in Ladakh, nomads are relatively free to govern themselves, as long as their actions are in accordance with state laws and regulations.”<sup>11</sup> However, this hands-off approach also means that the government has less trust, access, and information to these nomadic communities in Changthang. Only when health issues, health-seeking behavior, and community directed goals are established can policymakers and NGOs alike hope to progress towards ensuring a high quality of life among everyone.<sup>16</sup>

## *Participant Profile*

Pasang is from Teri along the Indus river in Changthang. His family used to have hundreds of goats and sheep but now they have none because they sent their kids to school so no one could help them take care of the animals. After he finished school, Pasang worked for an association established to help nomadic communities by cutting out the “middle man” pashmina trader and sourcing directly from the communities to produce pashmina products. After receiving technical training on pashmina processing and working for the association, Pasang decided to open up his own wool processing business with the help of a government loan. Now Pasang works with five different pashmina providers from Changthang and he processes the wool then produces beautiful pashima clothing for sale at the Leh main market. He said, “When I was young every household had animals, now people don’t keep animals”. He believes that urbanization “spoiled the lifestyle of traditional Ladakhis” because now there is this insatiable need for people to earn more and more money and the sense of community in the city is collapsing compared to that in villages. Yet, kids don’t want to return to their villages.



## Participant Profile

Stanzin (77) is a former shepherd at Chushul village. He was a shepherd for 70 years and only stopped six years ago. When asked about what changed over the course of his tenure, Stanzin talked first about food, saying that before people only ate tsampa and butter tea, but now people have options to eat junk food. In the past, life as a nomad was more difficult because they would have to trek long distances with animals to trade salt and wool with barley at Leh. Now it is easier because of roads and cars, he articulated that “the lifestyle has changed.” He has six kids, three of whom are shepherds and three of whom went to school. He says it is important to continue the nomadic pastoral lifestyle because “this is the way we can survive.” Stanzin feels that people like him in his community can’t get other jobs, even with the government, because people need good education for that. He described how traditionally the older kids in a family become shepherds while the younger ones go to school because at least one or two have to continue the parent’s lifestyle. Stanzin likes the summer time the most because animals get good grass and water. He stopped shepherding because he got to old. *Stanzin has had chronic stomach pain for years and has sought help from both an amchi and the allopathic centers, however treatment is temporary and the pain always returns.*



*Photo of Stanzin taken in his home.*

Due to all of these recent and rapid development shifts in the Ladakh region, as well as the efforts of several government initiatives, there are now different types of Changpa communities in Changthang who practice pastoralism. Pastoralism is the practice of “livestock raising as a primary economic activity.”<sup>19</sup> In Changthang the primary livestock that pastoral communities raise are goats, sheep, and yak. Fully nomadic changpa people in regions such as the Tso Moriri area (see map of Leh District above) move their herds year-round to different grazing pastures and live exclusively in mobile homes such as tents. Nomads will be defined as “a people who have no fixed residence but move from place to place usually seasonally and within a well-defined territory.”<sup>20</sup> Changpa communities have increasingly become semi nomadic, which will be defined as “a people living usually in portable or temporary dwellings and practicing seasonal migration *but having a base camp*” (emphasis added).<sup>21</sup> In areas surrounding Pangong Lake in Changthang, many semi-nomadic villages have been established from which select family members will take their herds to temporary camps in the mountains for several months out of the year and will then return home when the pastures by the village are suitable for grazing. Another trend of part-time pastoralism, or absentee pastoralism, has become popular in the Ladakh region. With this method, some pastoralists negotiate to leave their herds with another family or caretaker in the winter while they live in Leh. Then, in the summer they will pick up their herds and shepherd in the summer pastures.<sup>7</sup> Finally, there are those Changpa communities in Changthang such as the villages of Maan and Merak along Pangong Lake whose families have all sold their herds to transition into another economic industry, primarily tourism, by opening up guest houses and restaurants.<sup>13</sup>

As the community and lifestyle of these different types of Changpa pastoralists varies, this research focuses specifically on the health and health-seeking behavior of *semi-nomadic* Changpa communities. Health-seeking behavior is defined as “any action undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy.”<sup>22</sup> This research covers the health-seeking behavior of semi-nomadic Changpa communities in Changthang, Ladakh including what health issues these communities face, what people do when they have health problems, and finally what, if any, preventative measures people take to maintain their good health. The research also covers key topics including community perspectives on the successes and challenges of Indian health system, medical pluralism in Changthang, and how theories from prior research on nomadic populations around the world do and do not apply to Changpa semi-nomadic communities.

# A Chain of Referrals:

## Successes and Challenges of the Indian Health System

The right to life and therefore the protection of health is ensured by India's constitution. The public sector of the health care system in India is made up of primary, secondary, and tertiary facilities. Primary facilities, prominent in rural parts of India, include sub centers, primary health centers, and community health centers. Sub centers are the "first point of contact between the primary health care system and the community, designed to handle maternal and child health, disease control, and health counseling for a population of 3,000 to 5,000."<sup>23</sup> Typically an Auxiliary Nurse Midwife (ANM) who rotates station every two years staffs the sub center. The primary health center (PHC) at the next level is the "first point of contact between a village community and a medical officer" and provides some more specialized services to a population served by roughly 6 sub centers.<sup>23</sup> Next, community health centers should be staffed with four medical specialists and be equipped with more advanced facilities and technology such as an X-ray. The secondary tier of the health system is made up of district hospitals that should be equipped to provide 24-hour obstetric care and blood storage.<sup>23</sup> All services at government facilities are free of cost, however some prescription drugs that are not on the essential drug list have to be purchased out of pocket at private pharmacies. Meanwhile, the private sector, particularly the private hospital sector, continues to grow in India with minimal regulation. Private hospitals are estimated to provide 80% of outpatient care and 60% inpatient care in India, while 40% of private care is estimated to be provided by unqualified practitioners.<sup>23</sup>

Ladakh's health infrastructure is relatively well established. Every village visited for this research had a sub center with a present and reachable ANM. Some sub centers, such as the one in Satho village, do technically have additional staff assigned to them, however those employees had permission to work in Leh for extended periods of time. This shortage of personnel and lack of accountability is a major flaw in the system in other parts of India. However, in Changthang, the sub centers serve populations well under the 3-5,000-person cap due to the region's relatively sparse inhabitation. As a result a single staff member can handle the sub center duties alone.

Sub centers are designed to treat common and relatively simple health issues, including delivering babies. However, the ANMs at the Parma and Satho sub centers described that it is too cold to deliver in their establishments. As a result all pregnant women are referred to the Chushul or Tangtse PHCs. From there, if women face potential complications the primary health centers refer them to the Leh district hospital, a 5-hour drive away in good conditions.<sup>24-27</sup>

This sequence of referral for childbirth seems to be relatively well accepted among semi-nomadic community members in Changthang. Nonetheless, many did have complaints about what they perceive to be unnecessary referrals in other health circumstances. The sub centers in Changthang do not have the ability to diagnose patients with any condition, even common health issues such as bacterial infections. As a result, sub centers will often supply basic drugs that they think might help. If those drugs do not work, patients will be referred on to the Chushul or Tangtse primary health centers that have slightly more specialized staff and equipment. In this sense the sub centers are little more than government-run drug stores. While no participants revealed specific cases of this referral chain, many expressed the sentiment that often people get referred even beyond the PHCs to the Leh district hospital or even Delhi. The journey to Leh from Changthang involves several hours of driving. Despite the lengthy journey, participants expressed the sentiment that it is still much easier to go to



Leh now than it once was. Families who do not have a car of their own can easily hitch a ride. Similarly, many families in Changthang either have friends or relatives in Leh who they can stay with for several days during their treatment.<sup>28</sup>

While some participants are frustrated with the referral chain, others commented on a common trend of jumping the system entirely and going straight to the Leh hospital themselves. The Chief Medical Officer of Leh District said, “for minor headache people end up in the hospital.”<sup>29</sup> Community members have very little faith in the capabilities of the primary health facilities so when they approach a sub center with a chronic headache problem and the ANM gives them pain killers, they become frustrated because the problem is only being managed, not treated and prevented in the future. Instead, the community members believe that specialists in Leh will be able to help them even though the ‘treatment’ they receive for a headache would likely be the very same painkillers. What the specialists should be able to do that the sub center and PHC staff do not is inform their patients of potential causes for their headache such as dehydration and poor diet. However, a vicious cycle develops in that the Leh district hospital is now completely overloaded due to the self-referring patients, and the overworked specialists then do not take the time to provide their specialist information.

Meanwhile, the sub centers and PHCs remain “idle.” The Chushul PHC staff claimed that they see only about 20 patients per day.<sup>24,27</sup> The solution that the CMO is working on is to put some of that patient work load back on the primary health facility staff by providing them with more resources and training to perform basic diagnostic tests. Hopefully, with the capability to diagnose the basic conditions faced by community members and provide treatment that is more certain to work, patients will gain back a trust of their PHCs and stop going directly to Leh. Alongside this increase in peripheral health infrastructure capabilities will be a re-branding of sub centers as “health and wellness centers.” The rebranding will promote more preventative health measures including lifestyle education on proper diet and hydration which, if effective, would also help patients with chronic conditions such as headaches.<sup>29</sup> The CMO is hoping to implement all of these changes by 2022 and hopefully the systematic adjustments will move towards breaking the unnecessary chain of professional and self-referrals to Leh. It is important to note, however, that according to an employee of HEALTH inc. (a Ladakhi non-profit), “equipment is only as good as people.”<sup>30</sup> The success of infrastructure re-branding and technological improvements that the CMO hopes to implement is very much dependent on the staff at these sub centers and PHCs.

Unfortunately, the HEALTH inc. employee pointed out that many staff at sub centers treat their patients as a nuisance and try to get rid of them as quickly as possible.<sup>30</sup> While increasing the duties of these staff to include basic diagnostic tests may help a little bit, the true intervention should target the ANMs and other PHC staff to try and increase their personal investment and interest in helping these communities. As it stands now, ANMs are not able to connect with their communities because they rotate stations every two years. Therefore they do not have an incentive to collect good data and run effective health education activities. According to the same HEALTH inc. employee, many ANMs view their position “as just another government job.”<sup>30</sup> Perhaps longer terms in each village would instead close this gap between health worker and community and instill a bit more enthusiasm among the health workers.

# “Now there are options”

## Medical Pluralism in Changthang

### *Participant Profile*

Tseten is a 60-year-old shepherd in Satho village who has just returned from an extended period of time shepherding in the mountains. He and another Satho villager take shifts caring for their herds in the mountains, and they schedule according to other work opportunities in the village, and of course they can trade shifts should unexpected health issues arise. *Tseten could not remember the last time he was sick because he only consults a doctor or amchi when something is very serious, he “doesn’t care with small sicknesses” like head aches and colds.* Tseten likes shepherding and believes that the animals save his life by providing milk and will for income, therefore it is his responsibility to reciprocate and care for their lives.

### *Participant Profile*

Tsering is a 74 year old living in Satho village. She was a shepherdess for 40 years before stopping due to old age and chronic knee pain. *Tsering often goes to the sub center for pain medicine for her knee. In the past she went to an amchi but she said that medicine never helped ease her pain.* Now Tsering’s daughter-in-law is a shepherdess taking care of the family herd in the mountains. Tsering is happy when the animals get good grass.

Allopathic medical centers and providers are well established in Ladakh, including sub centers, PHCs, and a district hospital in Leh that has been rated one of the best government hospitals in India. However, there is also a deep-rooted feeling among locals to seek the help of ‘traditional medicine’ from amchis (Tibetan medical practitioners) and oracles (spiritual divination practitioners).

Several participants discussed their reliance on both amchis and allopathic doctors for health issues ranging from stomach pain to headaches to unknown ailments. Particularly, participants referred to the fact that “in the past” (i.e. before recent developments in accessibility and allopathic health center infrastructure) the only option shepherds had for health care was to see an amchi. Now that there are options, many participants described going back and forth between an amchi and an allopathic health post for care. Some prefer the allopathic center over the amchi for purely logistical reasons, saying that the sub center is closer and more accessible than the amchi, so they mostly go there for help.<sup>31-33</sup> Others go to an allopathic health facility only for serious conditions in which they need “quick relief” otherwise they prefer amchi medicine because it does not have any side effects.<sup>13,34,35</sup> These findings correspond with those of Alexandra Beard’s study on medical pluralism in Kathmandu. Beard found that “amount of time that it takes for Ayurvedic, Tibetan, and Chinese medicine to take effect is the primary reason that allopathic medicine is better in more critical illness or injuries.”<sup>36</sup>

One shepherd described how in the past when amchis were the primary contact for medical care, “there weren’t so many diseases.” Now, he prefers the help of allopathic doctors who he believes are more familiar with and therefore able to treat new diseases.<sup>33</sup> This is an interesting perspective because these “new diseases” he is referencing are likely the non-communicable lifestyle diseases that have become increasingly recognized in the region such as diabetes, hypertension, cardiovascular disease, etc. While allopathic doctors may have more effective medicine or treatment to provide patients who already have these lifestyle diseases, the philosophy of Tibetan medicine, which promotes healthy lifestyles and behaviors rather than a “quick fix” pill or treatment might actually be



## Participant Profile

Dachan is a 64 year old woman in Satho village who sold her family's herd of 250 goats and sheep four years ago because her kids got an education and now aren't able to care for them. When she still had the herd, she and her husband would alternate taking the animals to the mountains. *Dachan recalled being sick two weeks before the interview. She had head pain and was vomiting and very dizzy so her husband called an amchi to the house for help. Since then she has been taking medicine prescribed by the amchi, which has helped her symptoms go away.* Dachan always prays for good health and when she is sick she is not happy.



*Photo of Dachan in her home.*

better suited for preventing and managing these lifestyle diseases in the long run. Perhaps Beard's findings offer an explanation for this perplexing perspective. On the one hand, Beard comments on the quality of medicine compared to the quality of the illness saying, "the herbal medications cannot combat the chemical contaminants unnaturally created in the city environment."<sup>36</sup> While the Changpa communities are not explicitly in a city environment, these "new diseases" can be attributed to similar "chemical contaminants" brought about by the highly processed food and supplies of urbanization. Furthermore, Beard comments how "in a world that craves instant gratification, it is difficult for people to justify the more holistic approaches of healing" such as amchi medicine. Similarly, "traditional medical systems are unique in that they often attribute the blame of the disease upon the patient."<sup>36</sup> Together, with an increasing temptation to seek "instant gratification" for health issues and an increasing availability of such "quick fix" medicine, it makes sense that people would turn away from a medical system that puts the blame on them and whose medicines derive from the same system of "chemical contaminants." While amchi medicine itself may not be able to combat a new "chemical" disease such as cancer, the preventative lifestyle it promotes is the best defense. In this sense, allopathic medicine and amchi medicine might be the perfect team if paired up. Patients could practice the daily healthy habits and care for the body according to amchi medicine, and if still they get a disease such as cancer they could add in help from an allopathic facility with strong chemical treatments.

Overall preference for an amchi or an allopathic medical facility is extremely dependent on the individual in terms of their philosophy, the medical system they were raised with, and their location. Many participants made steadfast claims about which services people prefer in general, and the order in which they visit different medical practitioners. However, the claims of the participants all contradicted each other revealing just how individual the preference is.<sup>13,35,37</sup> Marion found a similar mix of use of both amchis and allopathic practitioners, however her research concluded that younger women only visit allopathic doctors while older women use a mix of services.<sup>10</sup> This study cannot reach a similar conclusion and rather found that even between generations there is variation. Some younger Changpa cited going to an amchi while some older Changpa stated that they had never seen an amchi.<sup>38,39</sup> Due to this variation in personal preference, it is critical that both medical systems collaborate with each other. The PHC at Chushul has an amchi stationed alongside allopathic doctors and nurses, which is a great example of the two systems coming together in collaboration to make the preferences of patients accessible without any stigma.



*The monk of Chushul thoughtfully spoke about health in the community and his role as an emergency amchi while carefully assembling a decorated clay sculpture to be used in a ritual the following day.*

Another example of the two systems working together rests with a revered monk in Chushul village who was a shepherd for 35 years before taking robes. Though he is not formally trained as an amchi, the monk provides emergency medical services to villagers and shepherds in the mountain. He described five instances of a condition locally referred to as *Bam*, in which a person suddenly becomes paralyzed and their legs get as hard as a stone. The disease is said to affect people who don't do much exercise and is caused by spiritual beings that live in the mountains. The monastic performs a series of rituals and helps patients regain the function of their legs.<sup>35</sup> This is an example of a medical condition believed to be caused by spiritual beings. It is important to remember that an allopathic doctor would not be able to treat the patient in the way that a spiritual medical practitioner such as an amchi can, and vice versa.

Finally, it is important to mention that some Changpa people also rely on oracles for medical services and predictions. Only two participants could recall direct instances of people seeking the help of an oracle, however many other

participants responded that people in general do rely on the services of oracles. One shepherd vaguely mentioned that some people from his village visited an oracle three months ago because someone had a "very serious sickness."<sup>13,28</sup>

Participants often described that the purpose of an oracle visit is to determine the severity of a condition and the fate of the patient. However, sometimes the oracle does provide medicine. For example, Dadul's mother once got very sick after giving birth to one of his siblings in the winter. She waited several days to see if the sickness would go away, when it continued to get worse one of the villagers trekked across the frozen Pangong lake in search of medical help. They eventually found an oracle and brought him to Dadul's mother. The oracle provided a pill that immediately helped her recover.<sup>13</sup> Though only mentioned vaguely or in distant stories such as the case with Dadul's mother, it is important to remember that in a medically plural society patients will often resort to whatever help they can get, often visiting multiple practitioners for the same condition. Beard sums it up nicely, saying "At times, seeking medical attention is not an issue of customs, religious belief, or even concern over how the medicine is made, but instead the need to obtain any form of treatment that can alleviate suffering quickly and effectively, while still respecting one's rights and basic human dignity."<sup>36</sup>



# A STORY OF THE LANDSCAPE 3/5

## Stone Walls

Stone walls line landscapes across the Changthang region, forming snaking circular pens. Obvious planning and effort have been put into the formation of these walls across the region, but to the untrained eye the plan may remain hidden, only presenting as abandoned structures from the distant past. Some walls enclose herds of animals, some only brown shrubs waiting to be consumed when the herd returns, and still others appear barren—perhaps abandoned or perhaps waiting for care and time to grow into a home for herds. These walls demonstrate the remarkable presence of pastoralists in Changthang, always waiting to welcome goats and sheep into their interior for respite from their journey across the high desert. Walls represent a boundary, a confined space that keeps things in and out, but in Changthang they also represent mobility. The very fact that these stone walls weave through the Changthang valleys represents the transience of both people and animals in the region. Their availability helps shepherds make camp every night and slowly make their way through the mountains. These stone walls keep herds in, wolves out, and transience alive.

*Photo of an animal enclosure  
beside Pangong Lake.*

# Common Health Issues in Semi-Nomadic Changpa Communities

## *Cold and Flu: What it means that this is the “most common” issue*

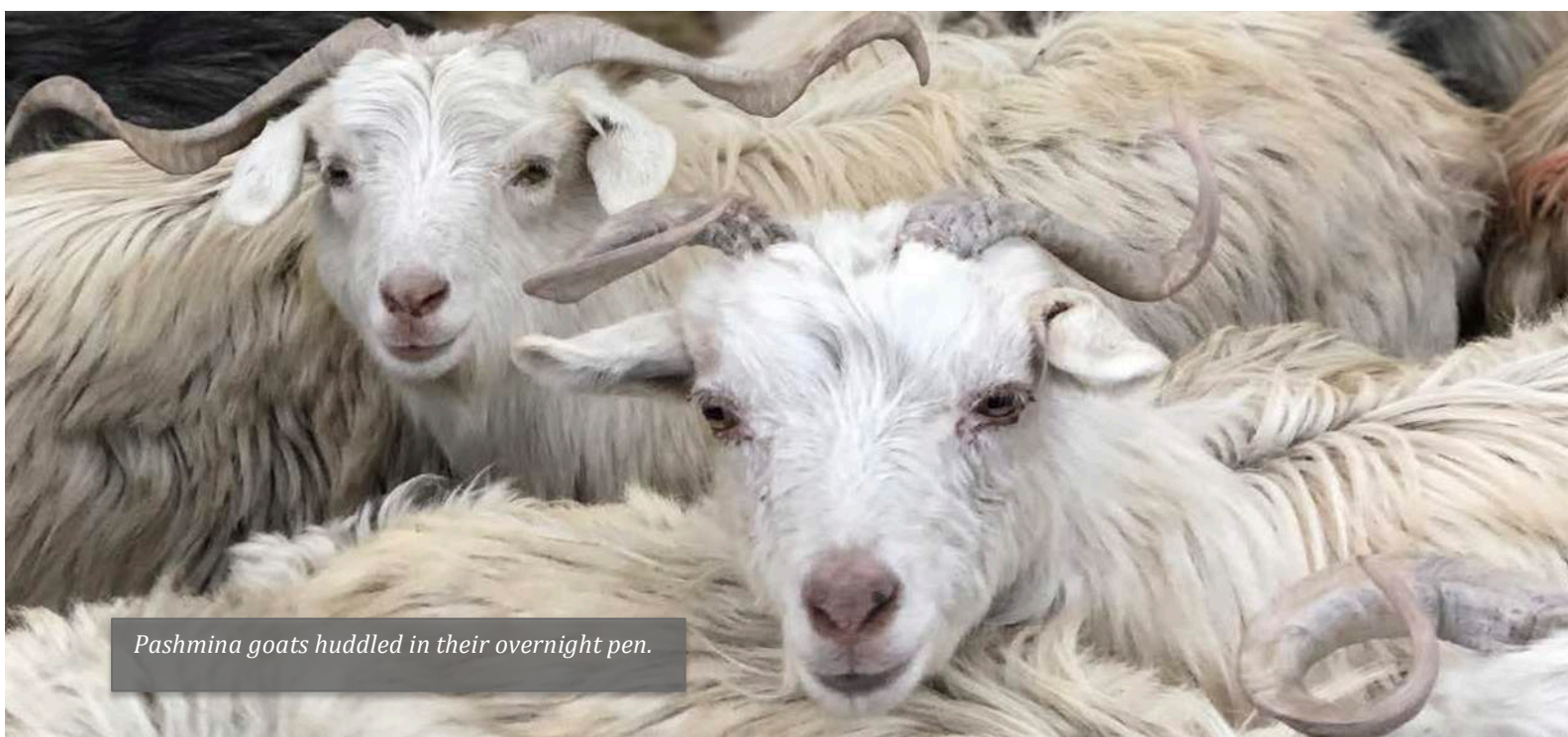
In interviews with community members, including current and former shepherds and medical center staff, the most common health issue in Changpa semi-nomadic communities unanimously cited is the common cold or flu. The source of these rampant viral infections is known to be seasonal changes and general cold weather. This condition is common among both the shepherds who are especially exposed to the cold Changthang climate as well as family members who stay in their villages year-round.

Everyone can access basic cold medicine from the sub centers in every village to mitigate the symptoms. Before heading to the mountains with their herds, shepherds stock up on these medicines to bring with them during their time away from the village and the sub center. Shepherds also cited *thang*, an amchi-prepared tea that strengthens the immune system as a medicine they have in constant stock. Occasionally, respondents mentioned that they have gone to an amchi or an allopathic facility (sub center) for more help if the cold symptoms get very bad.

The fact that the common cold is the most common and serious health issue seems to be relatively good news given that India is infamous for a high prevalence of infectious diseases including malaria, tuberculosis, dengue, polio, etc. alongside an ever-increasing burden of non-communicable diseases such as cardiovascular disease and respiratory illness.<sup>40</sup> However, the HEALTH inc. employee suggested an unsettling cause for the high number of cold and flu cases in Ladakh. She highlighted the common occurrence of antibiotic over-prescription saying that when a 12-year-old has taken 12 courses of antibiotics in their lifetime, their immune system is inevitably going to be weakened and therefore more receptive to viral infections such as the cold and flu.<sup>30</sup> Sub centers are not equipped with diagnosing technology. Therefore, when a patient visits a sub center with a sickness, viral or bacterial, often the solution is to hand out an anti-biotic *in case it is bacterial*.

This lack of diagnosis and over-prescription not only weakens the immune system of growing children, but also it has the potential to contribute to antibiotic resistant bacteria. Antibiotic resistance occurs when the full course of antibiotics is not completed, giving bacteria in the body exposure to the medicine without wiping it out, which helps it evolve to become resistant to the medicine in the future. A World Health Organization survey conducted in 2015 in India highlighted that 75% of respondents “think, incorrectly, that colds and flu can be treated with antibiotics; and only 58% know that they should stop taking antibiotics only when they finish the course as directed.” Similarly, 76% of respondents “report having taken antibiotics within the past 6 months.”<sup>41</sup> These overwhelming national statistics echo ominously in the context of Changthang.





*Pashmina goats huddled in their overnight pen.*

Another key problem highlighted by this response is the lack of knowledge and access to information that the communities have regarding health issues they could be facing. Even the CMO of Leh District said, “Kargyam and Chushul, they don’t have any problems” and that people of Changthang are less vulnerable to lifestyle diseases that are becoming increasingly recognized in urban Leh.<sup>29</sup> However, the woman working at HEALTH inc. emphasized that health problems resulting from the high altitude and low oxygen are very common in Ladakh, and that the people of Changthang, including semi-nomadic communities, are no exception to this trend. Similarly the woman from HEALTH inc. also proposed malnutrition, substance abuse, and STDs as other health problems likely facing these communities.<sup>30</sup> However, few respondents made any mention of these other serious conditions. This lack of response is likely owing to their lack of access to knowledge about symptoms of serious conditions such as anemia. Even if a community member wanted to know about a condition or the risks they face, it is not within the culture for a patient to ask their doctor questions, or to request a diagnosis when the ANM is willing to dole out a course of antibiotics without confirmation.

The sub center staff who participated in interviews did mention that they occasionally run educational campaigns to teach the community about hygiene, infant care, and various infectious diseases. When asked, the staff said that they felt the communities listen to their information.<sup>24–27</sup> However, evaluation data to confirm the effectiveness of these one-day events or lessons in the communities does not exist. Many, including the woman at HEALTH inc., are skeptical, saying “when has an education campaign ever worked around the world?”<sup>30</sup>

Often, educational campaigns target issues faced by marginalized populations in the way that urban, educated people think they should be addressed. When asked about how to stay healthy, many participants cited avoidance of open defecation, hygiene, and wearing thick clothes as important.<sup>13,31,33,39</sup> However, a thorough understanding of *why* those things are important does not exist, rather it felt as if the participants were reciting lines that had been fed to them countless times before without further explanation. In her research on the health of women in Leh, Marion encountered a similar lack of *thorough* education on health issues and prevention.<sup>8</sup> The key to education should actually be teaching people about issues in the way that they want to learn and in a way that actually hits home for them. The HEALTH inc. woman thinks that the best way to do this is to “practice what you preach” in other words, to eat healthy, to exercise, to not smoke, etc. and to explain why it matters on a personal level, not just to provide a detached set of statistics on how smoking might give you cancer in some unknown number of years.<sup>30</sup>

## Other “small diseases”

### Participant Profile

Tashi is from Phobrang but he married into Parma village. Tashi used to be a shepherd but he sold his animals about 10 years ago because no one could take care of them. He does not have a favorite part of shepherding, rather he adapts to whatever situation he is in whether on the mountain or in town. *When he was still a shepherd, Tashi started experiencing chronic stomach pain (peptic disease) for which he visited an amchi. However, over time the pain kept coming back so last year he went to the sub center. The sub center then referred him to the Leh hospital, where he went and received medicine. Now the pain has gone away, however he is not hopeful that it is gone for good.*

After a bit of probing beyond the common cold, many interview participants proceeded to discuss other health issues that they are aware of in their communities including hypertension, joint pain, stomach pain, and headaches. Several participants attributed the joint (knee and back) pain to old age and cold weather. None of these participants explicitly suggested shepherding and the associated lifetime of walking through the mountains as the source of the joint pain, however that cause is likely encompassed within the old-age explanation. While an unfortunate condition to endure, joint pain is a relatively minor health problem with minimal prevention and treatment options.

Headaches were often lumped in as a health condition alongside joint pain in interviews. Participants similarly cited old age and cold weather as the cause of chronic headaches. However, participant observation conducted while living in villages and with

shepherds and their herds in the mountains revealed that people in these communities rarely drink water. The only drink that community members regularly consume is milk and butter tea. Dehydration is a likely cause of the prevalence of headaches. The HEALTH inc. employee also argued that poor diet is a main contributor to the prevalence of headaches.<sup>30</sup> Headache as a health issue is another instance of a lack of access to knowledge surrounding health and healthy lifestyles (i.e. a proper diet and drinking water).

Stomach pain, also referred to as indigestion, acidity, and peptic disease, is another condition that almost every interview participant mentioned as a significant issue in their community. Few of these participants had ideas about the cause of this issue, and only one mentioned eating excess oil as a likely contributor. Though the stomach pain is described very vaguely, it is likely linked to diet and potential bacterial infections.<sup>42</sup> Several community members shared stories of experiencing chronic stomach pain for years. Some participants had gone to allopathic medical centers for medicine while others visited amchis, but most of the time interviewees experiencing this long-term condition described going to both medical providers for help. Both types of treatment offered the participants temporary relief, however the condition always seemed to return. Without a diagnosis for the exact cause of the stomach pain, be it bacterial or lifestyle, any treatment attempts would at best only manage the pain rather than treat it.





Yet another commonly cited condition that has direct links to diet and lifestyle is hypertension. When uncontrolled, hypertension can lead to serious health issues including cardiovascular disease, heart attack, kidney failure, and blindness. Community members can take medication to help regulate hypertension, however, the best treatment and prevention for hypertension is a healthy diet and lifestyle.<sup>43</sup>

After describing many of the above health issues as common in the community, the ANM at the Parma village sub center said that she and other ANMs in similar contexts can handle such “small diseases” with their constant supply of “emergency drugs” including painkillers for headaches and joint pain, ORS and anti-biotics for diarrhea, paracetamol for fever, and omeprazole for stomach pain.<sup>24-27</sup> In this sense, the sub center staff are well equipped to handle the most common health issues in these semi-nomadic communities. The sub center staff have been trained to hand out these medications without a diagnosis, similar to an elementary school nurse in the United States. As a result their knowledge about the cause of these health issues remains inadequate. For example, the ANM at the Satho sub center said that hypertension is a big problem in the community, and that she often has to remind community members to take their medicine. However, she could not offer an explanation for the cause of hypertension.<sup>26</sup> This example demonstrates a general lack of access to a knowledge base surrounding prevalent health issues, particularly lifestyle diseases such as hypertension. Community members know to take the medicine and sub center staff know to provide and remind them to do so, yet no one knows how to truly prevent and manage the condition. This lack of access to a knowledge base about health issues among both the community members and the peripheral medical facility staff means that supplying these basic drugs will not fix the health problem, rather they will often only mask or even contribute to a more serious and chronic health issues.



## *Cancer on the Rise: Hygiene as the solution?*

### *Participant Profile*

A pair of siblings in Kargyam told a story about their father who recently passed away from stomach cancer. As with most cases of cancer, the father waited too long to seek help and by the time the hospital in Leh detected it, the cancer was already in a late stage and could not be treated, so they did not even bother to send him to Delhi. The father was unable to keep any food down, yet his children described that his strong will to live kept him alive. They even called in an oracle and asked the oracle to artificially predict that the father would survive in order to keep his hopes up. With this, the father survived for several months, way past the predictions of the doctors. The children attribute his survival to his will and his strength. They compared this story to another villager who also got diagnosed with late stages of cancer. This man, however, had a very bad attitude about his condition and did not have any hope. As a result he passed away within a matter of weeks.

Aside from the prevalent, yet relatively manageable lifestyle diseases mentioned above, a few community members mentioned cancer as a serious health concern. Though often unspecified, the particular types of cancer that people referred to are esophageal and stomach cancer. Of the three deaths in Satho village last year, one of them was a 55 year old who died of stomach cancer. When prompted, many participants had no idea what could be causing the cancer, but a few suggested the consumption of junk food and of leftover food, as well as drinking boiling water from plastic bottles as potential sources.<sup>13,33,44</sup> While the causes of different cancers can be difficult to pinpoint, health professionals in Leh including the woman at HEALTH inc. suspect that the cancer prevalent in this region is likely due to diet and consumption of harmful toxins in junk food such as Maggi.\*<sup>29,30</sup>

The biggest problem regarding cancer is that often cases are detected in very late stages with minimal chances of survival. Furthermore, no facilities in

Ladakh have the equipment to treat patients with cancer, therefore Ladakhis are referred to Delhi for treatment. Even then, as the HEALTH inc. employee put it, cancer is the “latest fear” because the waitlist at Delhi public hospitals is too long so patients will likely die before they can even start treatment. As a result people have to resort to private hospitals for treatment, which is extremely expensive and still often results in death.<sup>30</sup>

Cancer has likely always been prevalent in the region, however it has only recently gained recognition as a health problem—giving the illusion that it is a new health issue. As the CMO of Leh District put it, “cancer is here, but it is not well documented.” As a result the CMO has begun the process of requesting that medical staff in all of the sub centers and primary health centers collect more detailed information on cancer cases. Instead of just reporting the number of deaths by cancer, the CMO hopes to gather data on the types of cancer and the demographic information of the patients.<sup>29</sup>

*\*Maggi is a 2-minute instant noodle brand mired in controversy in India because it is known to have high concentrations of heavy metals and other toxins.*



Basic stock of medical supplies at the Parma village sub center.



ANM educational campaigns advertised in the Parma sub center. The fact that they are in English raises concern about their effectiveness and ability to reach the local community.

When education efforts teach communities that “bad food” is the cause of health issues including cancer, some think that means leftover food rather than unhealthy food. This is yet another example of education campaigns resulting in confusion and potential misinformation because community members don’t ask clarifying questions. Education is rarely enough to create positive change in the realm of health. Knowing that a particular behavior is bad for health is not enough to get people to change their habits, rather providing incentives and generating personal investment in the issue stand more of a chance of creating change. Community members will never understand these incentives if they aren’t encouraged to understand the basic information and ask questions.<sup>30</sup>

While gaining recognition and increasing community knowledge of the issue is progress, currently the diagnosis process still takes too long. People living in these semi-nomadic communities only visit allopathic sub centers after prolonged suffering, be it a common cold or cancer. As a result, when they have cancer, they only begin the long sequence of referrals when they are experiencing extreme symptoms. It will then take even longer to get referred through the health system to the Leh District Hospital and then on to Delhi for often-unsuccessful treatment. Cancer can serve to illustrate the downside of poor health-seeking behavior lies, because people who visit medical centers early have

a better chance of getting diagnosed and referred in time for a successful recovery. Hopefully, as cancer and its symptoms gain recognition in communities in Ladakh, health-seeking behavior will also improve.



## *Painful Smiles: Tooth decay and water contamination*



*"We are too old now, it's all over for us," Nyima ominously declared before turning to chase his herd.*

### *Participant Profile*

Nyima is a shepherd of Chushul, Standing in the middle of a beautiful sandy valley surrounded by snow capped mountains, Nyima simply starting speaking before any questions were asked. He thinks it's important to continue this lifestyle because "everything we can get from the animals" including skin material, dairy, pashmina, etc. Despite the sustainability of the lifestyle, Nyima knows that the younger generation is less interested. He eerily mused, "we are too old now, it's all over for us". Before he could elaborate, Nyima noticed his herd wandering off in the wrong direction and promptly turned around to resume his work.

Among the semi-nomads from the Chushul village there are four groups. Every year, two groups go to a pasture at one end of the valley while the other two go to another pasture at the other end. Nyima said that the pasture he was in is the better one because it has clean water. When asked to clarify, Nyima said that many water sources in the area are polluted, some due to natural contamination and others because of waste discarded from army posts. He then detailed how important streams in the Chushul area in particular have a high concentration of fluoride.<sup>45</sup> Excess fluoride in water sources causes tooth decay, especially among youth under the age of 12 who are still developing enamel.<sup>46</sup> The staff of the Chushul PHC also recognize the prevalence of tooth problems, and as of about a month ago, a dentist was posted to work at the PHC. This dentist now splits his time between Leh and Chushul.



Nyima talked about how in the past, community members knew that the water was bad, yet they had no option but to drink the contaminated water. Now, the government has installed several hand pumps that pull water from various clean ground-water sources. However, the nomads who have to go to the other “bad” valley still sometimes have to resort to drinking contaminated water. As a result, tooth decay is still a very common condition among Chushul villagers. Following this discussion of contaminated water and tooth decay, Nyima proceeded to say that “mountain people never get any health issues.”<sup>45</sup>

Finally, Nyima mentioned that the government came to Chushul to test the village’s water over a year ago, yet he was unaware of the results. The Public Health Engineering Department of Leh (PHE) is responsible for constructing and maintaining water infrastructure in Leh district. The chemical engineer of PHE offered much information on water contamination in Changthang. He described how his team does site visits to villages around Changthang every summer to test water sources then listed several villages with known fluoride-contaminated water sources, both streams and hand pumps, including Chushul. He then described how there are a few technologies for de-fluoridation that might be suitable to be installed in Changthang. For example, there is one solar-powered technology that can be attached to hand pumps and is relatively cheap to install. PHE submitted a proposal for funding from the government to purchase and install this technology, however he described how long it takes for such funding to move through the Indian bureaucracy. The chemical engineer is hoping that the funding will come through in June and the department will have the equipment installed in Changthang villages by next year.<sup>47</sup>

This is a very interesting health case study because once again, education or knowledge that a particular behavior will have negative impacts on health, is proven insufficient to actually create change in health behavior. Communities such as the semi-nomads of Chushul know that certain water sources are contaminated yet historically, and even now, many still used the source because *they have no other option*. The only successful intervention is helping people find alternatives, for example the government installed hand pumps.

Furthermore, this case study demonstrates a commonly found disconnect between government and community. Nyima knew that the government came to test the water, but he had no idea what the test results were (if the water is in fact contaminated or not) and what is being done about the results. In fact, PHE did find that the water is contaminated and PHE’s team is actively working to implement a solution. While PHE’s work to fix the fluoride contamination problem is exciting and hopeful, it would be ideal if the Chushul community could be looped into the process and made aware of the confirmed contamination and upcoming solution so that people like Nyima aren’t left wondering.

Finally, Nyima’s statement that shepherds don’t have health issues directly following a discussion of rampant tooth decay among Chushul villagers, including shepherds, provides insight into what exactly people consider a ‘health issue.’ In this instance, Nyima clearly does not consider tooth decay to be a health issue even though “oral health affects general health by causing considerable pain and suffering and by changing what people eat, their speech and their quality of life and well-being.”<sup>48</sup> Similarly, a businessman in Leh from a semi-nomadic community in Changthang talked about the prevalence of rotten teeth among friends in his home community. After recognizing the prevalence of poor oral health he said, “I don’t think that’s a problem that impacts them at all.”<sup>37</sup> This perspective that tooth decay is not a health issue is also incorporated into the protocol of testing water sources by the PHE department. If there is a reported outbreak of infectious disease, potentially caused by contaminated water, such as diarrhea, the PHE team will visit the site and test the water for human pollutants and natural contaminants. However, the department will not be called into action for non-infectious conditions tooth decay caused by fluoride and sulfur contamination. They will only test the water, in situations like Chushul, if it is well established by community members that the water is harmful. As communities in Ladakh, and India in general, increasingly shift towards facing a high burden of lifestyle and non-communicable diseases, perspectives and protocols also need to shift their focus to recognizing the importance of chronic health conditions including tooth decay and their impact on quality of life.

## *“It is the way it is”: Childbirth in the high mountains*

### *Participant Profile*

The Shepherdess of Phobrang is a 34-year-old woman originally from Kargyam. She is now married to Phobrang. As a semi-nomad, she herds hundreds of sheep and goats in the mountain. The shepherdess can't recall ever being sick and needing to seek health care, however, four months ago she gave birth to a baby girl while up in pasture with her herd. During her pregnancy, she routinely visited the Phobrang sub center for pre-natal check ups, and she described taking medication that the ANM gave her to help with the pregnancy. In the late stages of her pregnancy the shepherdess's husband was up in the mountains with the family's herd. However, he experiences chronic teeth problems and called for her to come to the mountain to care for the herd while he got a particularly bad bout of tooth pain checked up at the village sub center. Without hesitation the shepherdess went to replace her husband. Several days later, she descended back into the village with a child in her arms, still attached to the umbilical chord. Following her delivery and return to the village, the shepherdess went back to the sub center for three antenatal check ups—the baby girl is healthy.

Stories like that of the Shepherdess of Phobrang are not at all uncommon among semi-nomadic Changpa communities. Following this interview, Dadul proceeded to reveal countless stories of women he knows who left their village for the mountain with a child in their belly and returned with a newborn in their arms. In her research on the health of women in Leh, Marion encountered a cultural belief that women are “unpure” after they give birth and are therefore ostracized following delivery. She stated that this practice is more common in rural areas, however this research did not encounter such a belief or practice.<sup>10</sup> Instead, these Changpa “mountain women” are clearly aware of sub center protocol to receive regular pre- and post-natal check ups and they even plan to deliver their children in medical centers, or at least at home with a midwife nearby.

However, protocol does not stand a chance against the responsibilities of a shepherding family. The Shepherdess of Phobrang did not intend to give birth in the mountains, but when duty called she did what was needed to do to care for the herd and her husband, and luckily, the delivery went fine. The shepherdess already has a 7-year-old son who she delivered in her home—clearly she prefers to give birth in a more secure setting. However, as Dadul describes, these mountain women “are fine with it because it is the way it is, they learn to deal.”<sup>13</sup>

This story, and others like it, provide a remarkable testament to the strength of women in nomadic and semi-nomadic communities as well as to the successes and challenges of ensuring maternal and child health. On the one hand, women seem to be aware of the expectation to receive check ups, however there also appears to be a gap between understanding the risks that they face and generating a personal investment in the importance of delivering in a home or facility with people and medical services around. Birthing success stories are easier to talk about than those that end in morbidity and mortality. None of the participants mentioned cases of maternal and infant mortality in Changpa communities. In her study on Changpa nomads, Goodall noticed a similar lack



*"If someone grows up never seeing the outside world and spends their life in the tent, it becomes their world" - Dadul*

of formal information; however she gained information through more informal channels. She confirms, "mortality and morbidity rates are not documented but according to locals and health workers, the levels are unacceptably high, particularly rates of maternal and infant mortality."<sup>7</sup>

According to a report on maternal and child health in Ladakh conducted in 2013-14, an estimated 25% of deliveries went unreported while 3% were home deliveries, and the final 72% were institutional deliveries.<sup>49</sup> These statistics are impressive considering the fact that just a generation or two ago, most women did home deliveries without a trained professional present. The Leh businessman from a nomadic community talked about how in his community all women used to do home deliveries. He said, "every family knows how to deliver" meaning almost every household had a grandmother or some elder who could act as a midwife during the birth.<sup>37</sup> Now, however, it is clear that the vast majority of women give birth at allopathic health centers.

Though unspecified, the high rate of unreported deliveries likely involves scenarios such as the above story in which rural women prioritize their duties over taking time to go to the Chushul or Tangtse PHC. It is likely that if women are told they don't face a high risk of complications during their pregnancy, they will not prioritize giving birth in an institution or even at home. Of the reported deliveries, 21.2% had complications and of the institutional deliveries, 30% of women had to stay at the medical center for more than 48 hours.<sup>49</sup> These statistics on the percentage of complications is alarmingly high, however it is important to consider that they do not account for all of the unreported deliveries, which are likely more cases of healthy deliveries because women did not feel a need to go to an institution for delivery.

Only 50% of infant deaths had a known cause, 43% of which were from pneumonia, 29% were fever related, followed by 24% due to low birth weight, and 14% due to asphyxia. Diarrhea, measles, and sepsis did not cause any reported deaths with a confirmed cause. The same data cites no maternal deaths in the district that year.<sup>49</sup> The fact that only half of infant deaths have a known cause is also relatively alarming, especially considering the fact that the other half are attributed to conditions that should be relatively manageable in an appropriate medical setting.

The high instances of low birth weight and corresponding mortality is a particularly unique health burden faced by Ladakhi women and infants due to the high altitude. If a low birth weight infant does not immediately die, instances of morbidity are still very likely. Low oxygen as a result of high altitude leads to low birth weight babies which in turn can result in poor lung development, protein deficiency among youth, poor brain development, and anemia.<sup>30</sup> While these conditions can be extremely serious, none of the participants mentioned any of them, demonstrating an acute lack of education about the risk that women and children in particular face. Altitude diseases are unique to Ladakhi populations, therefore the Ladakhi health system needs to take independent action to educate and address the conditions that the rest of the Indian health system does not pay attention to.

# A STORY OF THE LANDSCAPE 4/5

## With the “Mountain People”

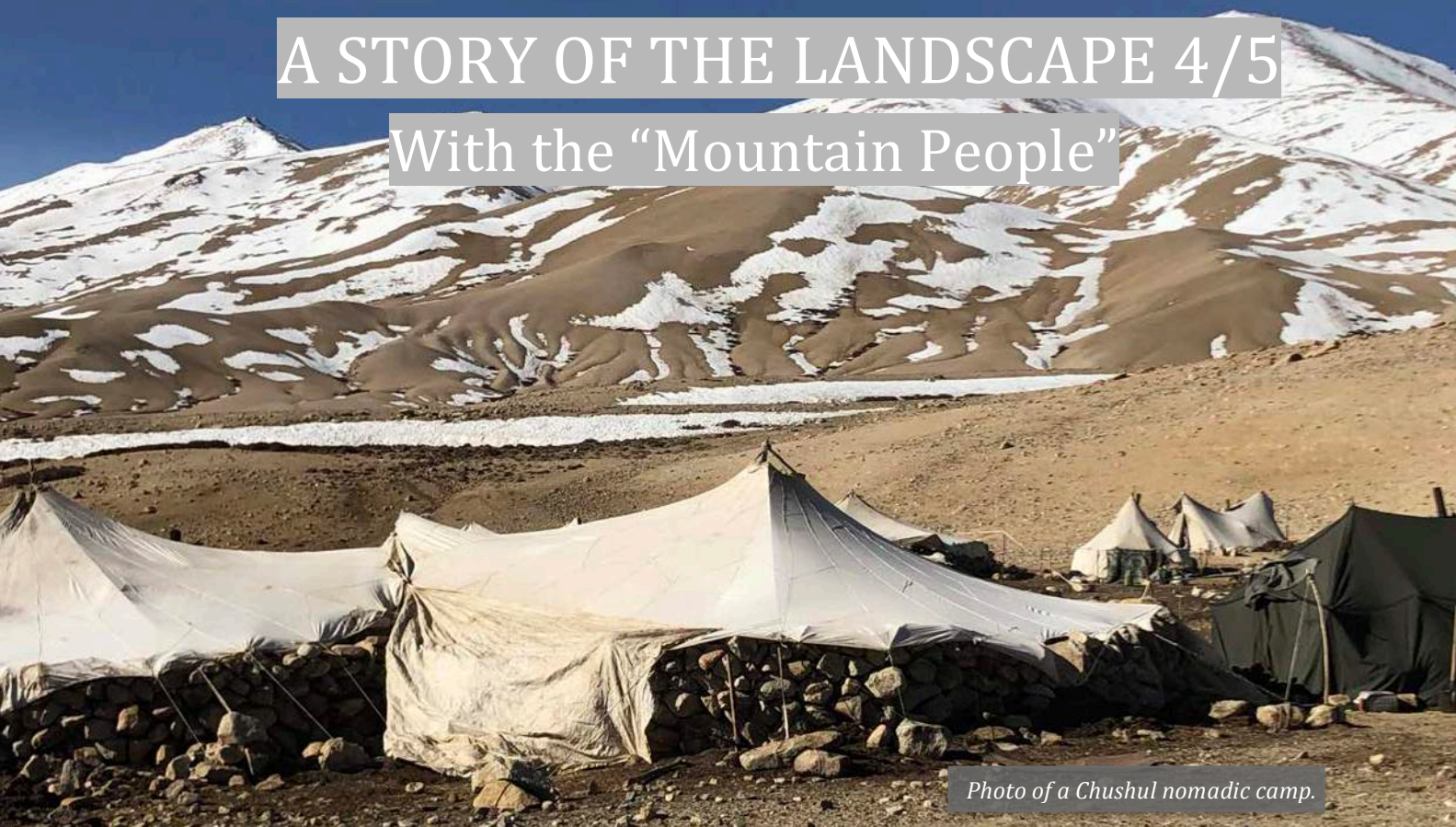


Photo of a Chushul nomadic camp.

Clumps of white peaked tents are scattered across the flat valley, surrounded by white peaked mountains. Inside the white havens, goats and sheep nestle together for warmth. Beside one animal pen sits a dark green tent. Pull the heavy dark green flap back and step into a warm and smoky tent interior with a metal stove and chimney in the center and worn rugs layered across the ground. Cold toes and fingers instantly tingle, welcoming the reprieve from the winds outside. Two shepherdesses whisper back and forth as they cook yellow *dahl* and rice in an effortlessly coordinated fashion.

After the nomads released their animals from the overnight shelters they slowly began guiding them through the valley and across mountainsides. After breakfast I headed out in the same direction, making slow progress across the desert landscape. When I got to the top of a relatively small hill I took a break to catch my breath. As soon as my feet stopped crunching on the sandy gravel I picked up faint sounds of whistling, singing, and yelping. Small hordes of black specks accompanied by slightly elongated silhouettes could be seen all around the valley. Below, the shepherd taking his flock across the flat valley made the quickest progress in the landscape. As the shepherd stopped for a snack or a drink, his flock would sprawl ahead and his gait became noticeably quicker as he moved to catch up. Above and to the right, a flock accompanied by two shepherdesses appeared to be perfectly motionless. After several minutes the specks started moving up and over the hump of a mountain, spreading out in a seemingly haphazard manner. The shepherdesses did not appear concerned as they sat and watched. Only when the flock passed another hump did the two women stand to follow. From a distance these patterns seem leisurely and relatively free. Up close it becomes clear that this is not the case. The shepherds constantly have to lap back and forth, urging the front of the pack forward while prodding or goading the back of the pack to keep up. They stop to sit whenever they get the chance, but these stops rarely last long as the flocks need constant minding. Yaks, on the other hand, do not ‘flow’ across the landscape. Rather, the shepherd takes them to a spot and lets them disperse and more or less stand in one general area for a much longer period of time than the sheep and goats do. Yaks prefer to lick the ground while goats and sheep peck at it.



# “They stay healthy naturally”: A discussion of illness prevention

## *Participant Profile*

The Shepherd of Chushul is 61 years old and has been a shepherd his whole life. He bluntly stated that he is a shepherd because there are “no other jobs” for people like him to survive. He likes the whole process of being a shepherd but says the work is still difficult. The biggest challenge he faces is that the animals often get lung problems and stop eating and need special medicine injections. *Meanwhile, the shepherd does not think twice about his own health.* He says that nomadic pastoralism is important to maintain because without it, the “chain of life breaks down.” Without herds of goat, sheep, and yaks, the people of Ladakh would have no milk or dairy products, the fields would lack minerals due to an absence of routine fertilization, and the pashmina industry that many have come to rely on would collapse.



*Photo of the Shepherd of Chushul, taken in a grazing valley.*

When asked about what they do to stay healthy, the participants almost always responded with a blank stare or a shy shrug of the shoulders. This reaction alone revealed how little people in these semi-nomadic communities think about their health. In a way, it makes sense because two critical health behaviors for a healthy life are incorporated into the daily routine of a shepherd: exercise and a healthy diet. Every day the shepherds wake up early in the morning and release their herds. Throughout the day they cross valley floors and guide their herds up and around mountain bends, stopping only occasionally to rest or eat a quick snack. Walking kilometers each day, day after day, year after year, shepherds experience no shortage of exercise, which is known to promote good health.<sup>50</sup> The only downside of this lifestyle is the wear and tear on their knees and backs, which causes pain among older shepherds and eventually pushes them to retire. Even then, the Changpa people are fit in old age, impressively able to haul sacks of grain and plough fields.

Though the healthy diet of shepherds is increasingly shifting away from purely organic foods towards an incorporation of easy to make junk food, overall participants still believe that the nomadic people eat a healthy diet. Not only does the increasing presence of Maggi packets in nomadic tents call this into question, but also the excessive consumption of butter tea and lack of fresh green vegetables in the staple diet of shepherds warrants a question of whether or not the Changpa people ever consumed a properly nourishing diet. In response to this question, Dadul described how in the past when Ladakh still acted as a key stop along the Silk Road trade route, Changpa people had access to fruit and vegetables brought in for trade. However, when



*Children who grow up in the high altitude are unphased by the oxygen deficiency and are always ready for a game of cricket or tag when the school day ends.*

the borders closed and traders stopped moving through the region, this availability of healthy foods was promptly reversed. As a result many Changpa now struggle to obtain fruits and vegetables, especially in the winter when the roads to Leh are closed.<sup>13</sup> Whether or not the Changpa diet is healthy now, the pervasive belief that it *is* results in a lack of proactive efforts to stay healthy. Even medical practitioners were not convinced that the semi-nomadic Changpa communities needed to do more to stay healthy.<sup>24-27</sup> The Chushul monk who acts as a community amchi said, "People are used to the cold and the high altitude so they stay healthy naturally. They are busy all day and exercise a lot so there is no need for them to do something special to be healthy."<sup>35</sup>

When probed, several participants cited hygiene, defined as washing hands and not eating leftover food, as the best way to stay healthy.<sup>31,33,39</sup> However, this discussion of 'hygiene' does not seem to encompass actively eating healthy food, rather it entails avoiding leftover food. One recently retired shepherd who spent 70 years in the mountain described how in the past "mountain people" could only eat healthy, organic food but now people prefer junk food like Maggi.<sup>34</sup> Meanwhile, other participants adamantly praise nomadic populations for their health, attributing it to a nutritious and organic diet. However, observation in a nomadic camp revealed that while many shepherds do eat traditional food including rice and *dahl*, they also rely on Maggi for several meals. Clearly there is a disconnect between perception of the nomadic lifestyle diet, and the reality resulting in misguided senses of security among those who know about the importance of avoiding junk food.

Though not illness prevention, some shepherds did describe proactive efforts to help them when they get sick in the mountains. All but one shepherdess agreed that they bring *thang*, an amchi tea that helps strengthen the immune system, basic cold medicine, and pain medicine for headaches with them to the mountain for when they get ill. The one shepherdess who did not bring any medicine said that she would go find an amchi whenever she got sick in the mountains.<sup>51</sup>


Another preventive behavior gleaned through participant observation rather than interviews is skin and eye protection. The shepherds always wear head scarves that cover their faces as sun protection and sunglasses to cover their eyes. Older generations would wear mesh or yak fur in front of their eyes to protect from dust.<sup>13</sup> Finally, a couple of shepherds talked about prayer as a healthy practice. Though one shepherd emphasized that he doesn't pray explicitly for his good health, he described the act of praying 1-2 hours every morning as a way to generate good *karma* for his next life, which encompasses good health for his next life.<sup>31,33</sup>



# A STORY OF THE LANDSCAPE 5/5

## Walking on Hollow Ground

At 6 in the morning the sun peeks above the eastern mountains just enough to shine some light on the snow caps of the mountains on the opposite side. Walking southward down the road, desert gravel stretches off to the left while snow blankets the ground all the way to the mountain bases, and the first hints of summer streams create trickling paths alongside the road. A foot bridge laden with prayer flags on the right of the road allows people and animals alike access to a patch of dirt and vegetation surrounded by melting streams. Walking through this swath of land gives the feeling of crushing prickly grass in one moment to crunching on top of snow in the next. Occasionally the snow gives way to ice shelves, resulting in an unsuspecting hollow cracking noise as one abruptly shuffles onwards. In certain spots one can see the ice shelf layers with icicles hanging low over mud or a stream. Even the stretches of dirt patches occasionally create this hollow sound. In the summer the ground softens however when it gets cold the mud freezes in hollow mounds. Walking on hollow ground creates an unsettling feeling, however the beauty of these natural phenomena is undeniable. Patches of baby bird feathers and animal scat litter the ground. Large dugout holes provide evidence of rat-like creatures that create homes there. These traces of life act as constant reminders of the concentration of animals in this area due to the rare presence of water in an otherwise arid landscape.

A photograph showing a person from behind, walking on a path of dry, brownish ground. In the background, there is a wide, flat valley with patches of snow, and a range of mountains with significant snow cover under a clear blue sky.

*Photo of host brother from Satho village on a morning walk through the valley.*

# Looking Back at Existing Literature: What Applies

## *Research on Other Nomadic Populations*

Many of the arguments made in pre-existing literature on the health of nomadic populations are not applicable to the Changpa nomads and semi-nomads in Changthang. Okeibunor et al. cited conflict with sedentary populations as a major barrier for nomads in Nigeria to access health services. This conflict arises from the perspective of sedentary communities that nomads are a nuisance, similar conflicts have also been recorded between the Raute nomads in Nepal and their settled neighbors.<sup>16,52</sup> Some Changpa participants mentioned that kids in school and particularly people in Leh are taught to believe that the nomadic lifestyle practiced by many Changpa families is dirty, uncivilized, and inferior. Lamo, a shepherd from Chushul said “since younger people are getting educated they think this is one of the worst ways of life so they don’t do it.”<sup>53</sup>

However, while this sentiment is problematic, none of the participants mentioned conflict with non-nomadic populations. Two potential theories could explain this lack of conflict. First, urbanization and its concurrent shifts towards sedentarization is still a relatively new phenomenon in Ladakh due to only recent developments in accessibility and industries aside from agriculture and pastoralism. Many families are still actively in the process of selling their herds and settling into stationary homes, while others sold their animals only a generation or two ago. As a result Ladakhis likely still recognize their own origins from this nomadic lifestyle and therefore do not yet view these pastoralists as a “nuisance.” The second potential explanation for a lack of conflict is that the nomadic and semi-nomadic pastoralists in Changthang are responsible for raising pashmina goats and producing raw pashmina material. This pashmina has become world-famous and therefore provides an income not just for the Changpa nomads but also for all of the settled shopkeepers and middle-men settled around Leh. Veena Bhasin is categorical: “these animals provide the Changpas with meat, milk, varieties of wool, which they use themselves and barter for grains and other utilities. This economic interdependence of nomadic pastoral and settled population has been an important characteristic of the society in this area.”<sup>54</sup> As a result, the settled populations in Ladakh recognize their direct reliance on the nomadic lifestyle and would not think to instigate conflict with them.

Another access barrier found among the nomadic population in Nigera is the cost of health care. While free services do exist, the conflict with sedentary populations pushes nomads to use private health services instead.<sup>16</sup> The private health care sector is not well established in Ladakh and the only time participants mentioned seeking care from private services, and paying money for care, was in the context of cancer treatment in Delhi because the public system in Leh does not have the technology to treat cancer. However, while money is not necessarily a primary access barrier for Changpa communities, distance is. Often patients will be referred to the Leh district hospital for any sort of complicated health issue, or they will go themselves if they do not have confidence in the care of sub centers and PHCs. However, transportation from Changthang to Leh involves at least a 4-5 hour drive, in good conditions, across either the highest or second highest motorable road in the world that is often clogged with army supply trucks, ice patches, and mud. In the winter these passes are even more unreliable and difficult to cross resulting in a forced reliance on peripheral medical facilities for care.



A theory from prior research that does apply is that stationary health posts strategically placed in every community suffices for basic health care needs among the nomadic and semi-nomadic Changpa people. Many shepherds recalled having to seek care from an amchi or an allopathic health post at some point during their time in the mountains with their herds. At most, participants cited having to walk for two or three hours to the nearest medical professional, and often that meant walking to their home village and staying for a couple of days while they received treatment and recovered. While in the village, the shepherds would leave their herds in the care of another shepherd in the mountains.

A two-hour walk is not ideal for a very sick person to endure in order to seek medical care, however all but one participant seemed content with this system. The one young shepherdess who spoke otherwise said she wished a medical facility or doctor could travel with the shepherds while they were in the mountains.<sup>32</sup> However, her tone implied that she knew the logistics and resources required for such a set up were unreasonable. Similar to the Fulani nomads in Nigera, Changpa nomads do have noticeably less access to care than settled populations in Ladakh. However, the Changpa also appear to be healthier than the settled populations. Furthermore, the semi-nomadic nature of the Changpa people allows the Indian health system to establish health centers at their village base, which is never too far from the pastures. While Okeinbunor et al. emphasizes that “the constant mobility of nomadic populations excludes them, or at the best places them at the edge of delivery services,” the lack of constant mobility of the Changpa provides a narrow gap through which the Indian health system can provide them services.<sup>16</sup> It would be interesting to compare these findings to the fully nomadic Changpa populations in other parts of Changthang to see if their constant mobility acts as an even greater health care access barrier than the barrier faced by semi-nomadic communities.

Contrast to trends theorized in prior research on nomadic populations, Changpa nomads do not experience a high burden of communicable disease due to geography. For example, many of the mosquito-borne illnesses common in India and sub-Saharan Africa including malaria, zika, dengue, and yellow fever do not exist here because mosquitos cannot survive the cold and dry climate. Similarly, kids are relatively well immunized in Ladakh resulting in a decreased incidence of infectious diseases.<sup>29,30</sup> However, Ladakhis do face a uniquely high burden of altitude-related health issues including low birth weight, anemia, protein deficiency, and poor lung development.

Another research study conducted on pastoral nomads in Chad aimed to focus on the social barriers to health due to a prominence of literature on the physical barriers that nomadic populations often face. Kate Hampshire found that women’s domain relates to all things based in the home, therefore any health issues that are serious enough to require outside medical practitioners falls to the decision-making of men. However, in Chad men are often the caretakers of the family herd therefore they spend a significant amount of time away from the home. As a result, women who remain have to rely on a more extended social network for health decision-making.<sup>55</sup> For Changpa semi-nomads, health care decision-making, primarily falls to the eldest in a household, regardless of gender. Therefore, families who remain in their village seem to always have a direct person to turn to. While there is very little gendered domain of health care decision-making, there is similarly a lack of gendered expectations regarding who can shepherd. Both men and women can fulfill that role in the family and sometimes married couples will even take turns shepherding. While other social and economic determinants certainly play a role in Changpa health-seeking behavior, gendered roles do not appear to be a significant barrier to health care and health decision-making.

## *Research on Other Ladakhi and Himalayan Populations*

In her paper on the health-seeking behavior of Ladakhi women in Leh, Marion highlights several key perspectives and trends that are interesting to apply to the semi-nomadic Changpa population. Marion encountered several cases of cancer that were discovered too late, as well as digestive problems and hypertension, all of which crossed over into this research on Changpa semi-nomadic communities. Marion also comments on an increased pressure to promote health in Ladakh saying, “health is now seen as the way to development.”<sup>10</sup> This statement appears to be the converse to perspectives regarding Changpa nomadic communities. The nomadic lifestyle is often taught to be an underdeveloped and lesser way of life, yet they are the very communities who appear healthier than urban populations. That is not to say that the nomads are entirely healthy, however in relative terms and according to self-perceptions, they are better off due to the incorporation of health prevention (i.e. exercise and supposedly healthy foods) into their lifestyle.

In her research Marion determined that “physical distance to facilities is a key determinant of access to care” as opposed to financial constraints or other access barriers.<sup>10</sup> This very much applies to semi-nomadic Changpa communities, who rarely seek the help of health care services and when they do often people go to whichever medical practitioner is closest, be it an allopathic sub center, an amchi, or an oracle. Interestingly, Marion concluded that policymakers ignore local medicine in their establishment and promotion of health care for all. However, this is belied by the very existence of an amchi office incorporated into the Chushul PHC.

Regarding health-seeking behavior, Marion found that “part of Ladakhi culture is that women are strong and will wait until the pain is so unbearable that they need to seek help.”<sup>10</sup> This trend very much holds true for all Changpa shepherds because they do not want to leave their herds unless they absolutely have to. Therefore, Changpa shepherds wait until they are truly miserable and without a recovery in sight until they go seek care. Marion also found a distrust in the allopathic medical system as a result of a lack of specialists able to handle complications. The Changpa communities have a similar distrust also due to poor diagnosing capabilities and resulting referrals. Thus, Marion encounters the same systematic issue of people going straight to the Leh hospital.<sup>10</sup>

Research on the Tibetan refugee “Drokpa” communities discussed trends and challenges facing the romanticized nomadic people. Despite key threats including China’s policies that have reduced pastures with fences, Groves articulates how “many nomads strive to continue their time-honored tradition of transhumance in the Changthang, instilling traditional values into their children and hoping that they too will carry on the nomadic legacy.”<sup>11</sup> This sentiment certainly holds true among Changpa shepherds, meanwhile many of the younger Changpa generation do not choose to “carry on the nomadic legacy” and instead opt for what many participants dubbed “easy money” in the tourist industry. For example, when asked if he thought continuing nomadic pastoralism as a lifestyle and livelihood is important, a business man in Leh originally from a nomadic Changpa community stated that he thought it was important, but only because Changthang is a great resource that should continue to be exploited. He said that instead of continuing nomadic pastoralism as it is practiced now (and has been practiced for generations), the industry should “commodify their life in a modern and better way.”<sup>37</sup>

While Groves cites religious and spiritual beliefs as present in the daily lives of the *Drokpa*, the Changpa semi-nomads did not mention religion as having a significant role in their daily lives. Groves states, “the unforgiving climate of Changthang mandates that the drokpa remain ever vigilant in their efforts to placate these earthly deities...they believe that these actions will, in turn, “secure food, cure illness, and avert danger.”<sup>11</sup> In this research, the only participant who mentioned the “earthly deities” was the monk of Chushul who sometimes performed rituals to heal people from spiritual afflictions. Even the monk, however, did not mention religious rituals or prayer as a necessary action for Changpa nomads to undergo in order to remain healthy.<sup>35</sup>



# Key Conclusions

1. There is a general consensus among the Changpa semi-nomadic communities and health workers posted to those villages that the most common health issues are “small diseases” such as the common cold, headaches, stomach pain, and joint pain. On the surface these health issues almost seem like a good sign, indicating the health of the community; however a key interview with a medical professional in Leh (HEALTH inc.) revealed the under-the-surface problems with the prevalence of these issues. The cold is caused by over prescription of antibiotics (which gets to point two about the capacity of the health system), and the headache and stomach pain have to do with diet and hydration. The only “small disease” that is relatively surface-level is the joint pain among the elderly caused by a lifetime of difficult trekking and animal shepherding, which isn’t ideal but seems for the moment to be a relatively unavoidable health issue so long as these communities keep pastoralism going.
2. The peripheral health centers should be able to handle the “small diseases” with the provision of basic drugs as well as lifestyle education programs. However, the lack of capability to diagnose sicknesses has resulted in an anti-biotic over-prescription problem, which, as mentioned above, has caused community members’ immune systems to weaken, making them more susceptible to common viral infections, which then lead to more antibiotic prescription. While many community members talked about hygiene as important for good health, there seemed to be a misunderstanding as to what “bad food” is, resulting in very little change in the consumption of junk food. Finally, a main role that sub centers are supposed to play is the capacity to deliver babies. Unfortunately, the sub centers in Changthang are “too cold” therefore women get referred to the PHC in either Chushul or Tangtse, and sometimes they then do not go to the institutions for delivery at all. Overall the current health system in Changthang is flawed due to a lack of ability to perform diagnostic tests and basic intended functions which results in the propagation of health issues and a chain of referrals that community members feel is often unnecessary. These flaws decrease community trust in the peripheral health system resulting in people going directly to the overloaded district hospital in Leh, or not even going for care at all until the problem is very serious.
3. As the burden of non-communicable lifestyle diseases increases in Changthang among semi-nomadic Changpa communities, both local and government policy/ protocol perceptions need to shift towards recognizing the long-term damage that can be caused. Chronic conditions such as tooth decay significantly decrease a person’s quality of life and therefore need to be approached with the same attitude that acute, infectious conditions are approached with. The department of Public Health Engineering should make it a priority to test all water sources of communities and Changthang and provide them with information on the status of the sources and alternatives for sourcing water. Communication between government efforts and local communities is critical to facilitating trust and moving towards beneficial change.

4. Cancer is a lifestyle disease that has recently gained recognition in the region and is therefore on many people's minds as a serious issue. Cancer has likely always existed in the region but is only now getting diagnosed. However, for the most part, diagnosis occurs in late stages in which patients have very little chance for survival. Furthermore, facilities in Ladakh currently do not have the capability to treat cancer, therefore patients have to go to Delhi where the only options are to either wait in a long line of patients for treatment at the public hospital or to spend money at a private hospital, both of which have low chance of survival. Education campaigns to warn community member about the cause of stomach cancer have resulted in misconceptions that leftover food is the culprit rather than junk food.
5. Altitude diseases are a unique health burden faced by Ladakhi communities including the semi-nomadic Changpa people. While low birth weight and anemia seemed to be well known issues among urban, educated populations in Leh, none of the participants from Changthang mentioned any of these potentially serious conditions. This demonstrates that the Changthang health centers in particular need to take extra steps beyond national education campaigns to educate locals on the potential conditions they may have.
6. Changthang is a medically plural region with allopathic health posts, amchis, and oracles all providing health services to Changpa people. Given that these systems are working with the same populations, they should collaborate to utilize different patient-practitioner relationships and generate the maximum understanding and benefit regarding health issues and illness prevention. An amchi is already formally stationed at the allopathic PHC in Chushul, however that should be just the first step in a collaboration between the providers.
7. General perceptions of the nomadic and semi-nomadic Changpa communities reveal that the pastoral lifestyle promotes health due to near constant exercise and the necessity to consume only "organic" food because that is all that is available in Changthang. However, the actual nutritious value of the typical diet consumed by Changpa people is up for debate as there is a serious lack of fruits and vegetables available for consumption. Furthermore, junk food such as maggi noodles is not hard to find in a nomadic camp, revealing that the influence of globalization still reaches these supposedly "remote" communities. Despite the debate over the Changpa diet, semi-nomadic communities overall appear relatively healthy.



# Moving Forward

## *Potential Solutions*

One challenge facing the Indian health system in Ladakh is a lack of facilities and infrastructure. However, compared to many other regions of India that have overburdened staff at all levels of care, only the district hospital in Leh has issues. The CMO of the district is already working to improve the diagnostic capabilities of sub centers and PHCs in Ladakh, which will hopefully break the problematic chain of professional and self-referrals for minor health issues. If successful, this solution will place some of the patient burden currently on the hospital staff back on the peripheral facility staff who have the capacity to take on extra patients.

Similarly, the CMO's upcoming campaign to rebrand the peripheral facilities as "health and wellness centers" in order to promote preventative health behavior will move in the direction of decreasing the burden of lifestyle diseases faced by Changpa communities. Unfortunately, the education campaigns currently run by the staff at peripheral facilities do not appear to be effective in that the participants of this research did not demonstrate a deep understanding of and personal investment in avoiding health issues and seeking care at appropriate times re cancer, pregnancy and birth, altitude diseases, diet, and hydration. While education campaigns are still a great initial step in a health intervention, the key to their success lies in promoting a full understanding of the issues which has to involve creating open channels through which community members can feel comfortable asking questions and even challenging the lessons. The main problem facing the health system in Changthang is the enthusiasm and investment of the health facility staff. A potential solution for this issue could be adjusting the two-year rotation schedule of ANMs stationed at sub centers and PHCs. Longer stations might promote more investment in the community and accountability for managing the health issues that community members face.

Often knowledge through education campaigns is not enough to create behavior change because even when people know a behavior or action is detrimental to their health, they still pursue it due to other factors. A great example of this is the contaminated water sources in the Chushul community. Community members know that the water is contaminated, however they are sometimes faced with no other option but to drink and use it. In situations like this, education is not enough, rather they need to be supplied with other options such as the hand pumps provided by the government to access clean ground water sources.

Regarding the increasing burden of lifestyle disease, a campaign to more actively promote the philosophy of amchi medicine, involving a healthy mind and behavior before the onset of an illness, might get Changpa community members to make better diet choices. In combination with this promotion of a healthy lifestyle should be a way to incentivize seeking care at the onset of health issues so that conditions such as cancer can be caught early and then treated with allopathic medicine. The beginning of this collaboration rests with the fact that an amchi is posted at the Chushul PHC, however more active integration could further benefit communities. In any health intervention moving forward, it is critical that policymakers remember the medically plural context in which they are hoping to make change and should therefore utilize the different resources available in the different systems.

This research proposes the theory that many of these semi-nomadic Changpa communities don't know what keeps them healthy because health is built into their lifestyle. As these populations increasingly choose to settle and move away from this healthy lifestyle, their burden of serious lifestyle disease could increase. The Changpa might settle with the same lack of knowledge about health and how to stay healthy, yet they will need that knowledge more because preventative behavior like physical activity and a healthy diet would no longer be incorporated into their daily life. Therefore the prevalence of lifestyle disease might increase and the communities with the burden will not know how to prevent the conditions and what to do should they develop an illness like cancer, resulting in a higher rate of mortality and morbidity than should be expected.

## *Future Research*

Interviews with semi-nomadic Changpa communities in this research aimed to cover two main lines of questioning: what people do when they get sick and how people stay healthy. The former has an assumption that people do in fact get sick which created problems because these nomads are relatively healthy (at least they claim to be with only a few exceptions). The latter is a bit more interesting in this case because again people don't claim that they do anything to stay healthy yet observation and background knowledge demonstrated that they actually lead relatively healthy lifestyles that incorporate illness prevention.

Given the complexity of Ladakh's developing landscape and context, there are countless fascinating phenomena that warrant future research, both regarding health and otherwise. It would be very interesting to conduct a more in-depth comparative survey study of the health and health-seeking behavior of fully nomadic, semi-nomadic, and recently settled populations. As this trend of settling and urbanization continues, Changpa communities offer an opportunity for a case study to follow the health trends through this process occurring globally. As people settle and their lifestyle becomes more unhealthy and possibly, causes more illness, particularly lifestyle diseases, it could be problematic if the attitude of not seeking help until it's too late does not shift alongside the lifestyle shift. Among nomadic communities there is also an interesting contradiction in that shepherds want younger generations to continue the pastoral lifestyle, yet they still send their kids to school knowing that their education will deter them from continuing pastoralism.

Though no participants mentioned mental health as a burden facing the community, the HEALTH inc. employee talked about a high rate of suicide among youth who are pressured by their families to study and succeed in Leh. It would be incredibly beneficial and eye opening to conduct research on this phenomenon.

This research encountered anecdotes about an unusually high prevalence of disability among villagers in Kargyam. The only theory that locals offered for this incidence is *karma*, however it would be fascinating to dive more into this topic to understand community perceptions of disability, general accessibility and quality of life for people with disability in these areas, as well as why the prevalence is so high in that one particular community.

In Changthang, and Ladakh in general, there are lots of public environmental campaigns. It would be interesting to evaluate the effectiveness of such campaigns, for example roadside signage warning against littering, in educating people and instilling a personal investment in care for the environment. There is also lots of concern about the cleanliness of the Indus river as well as water-shortages. There are a couple of projects to create "ice stupas" and artificial glaciers to help mitigate water shortages in the dry season. With the ice stupa project in general, there has apparently been some skepticism among communities regarding control over the water flow so it could be useful to look into how these projects are received by communities and potentially change inter-village dynamics.

Finally, at the intersection between water issues and nomadic communities, it would be worthwhile to survey Changpa communities' relationship with water including how water sources, both clean and contaminated, determine mobility patterns and the process of sedentarization. Furthermore, it is essential to learn more about the local knowledge re water sources—which are clean, which are dirty—and perceptions of increasing pollution due to the increasing presence of tourists and army resources.

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# Appendix

## *Terms and Acronyms*

PHC – Primary Health Center  
ANM – Auxillary Nurse Midwife  
Amchi – Traditional Tibetan medical practitioner  
Maggi – Instant noodles  
CMO – Shief Medical Officer  
PHE – Public Health Engineering Department of Leh District

## *Logistical Considerations*

Anyone from outside Changthang (including domestic Indian tourists) needs a permit to visit the region. There are several police and army check point along the roads so it is important that you do have a valid permit. The permit costs 1200 INR for 7 days but can be extended. I paid 1800 INR for 10 days. To get a permit you need two people to apply together, however tourist agencies in Leh can pair up solo travelers for permit purposes. The two people on the same permit do not have to actually travel together so I was able to go to Changthang alone with my guide (co-researcher).

Spring 2019 is the first season in which tourists are allowed to travel to the villages I visited including chushul and Kargyam. As a result many of the local authorities and local villagers questioned my presence, however my co-researcher and I reassured everyone that I was formally allowed to be there. The villagers were still very shy to talk with me as they had very little prior interaction with toursits such as myself. Tourists are technically not allowed to Phobrang village, Dadrul's hometown, with the permit. However the village is also not explicitly listed in the restricted zone so we pulled off a one-night visit. This restriction may tighten in the future.

Gas is very expensive in Changthang, coupled with expensive homestays and a co-researcher fee, independent research in this region can cost quite a bit. I recommend that students in the future try to pair up to share some of these costs as it is not possible to stay within the SIT provided budget.

# Interview Guide

- I. Common health issues among population
  - a. Chronic (hypertension, diabetes, arthritis, eye problems, asthma)
  - b. Injuries (broken bones)
  - c. Infectious/Communicable (diarrhea—parasite/ bacteria, TB, fever)

*What are the most common health issues in your community? (Can specify further to understand common issues in the above categories)*

*What are the most serious health issues in your community?*
- II. Knowledge about source of health issues

*What caused/ causes \_\_\_\_\_?*
- III. Health prevention

*What do you do to stay healthy?*

*Why do you believe you are healthy?*

*What do you do to avoid getting sick or injured? (In your daily/ annual routine?)*
- IV. Health infrastructure available and utilized
  - a. Traditional doctor stationed somewhere
  - b. Allopathic health outposts
    - i. Different levels (CHCs, PHCs, District Hospital)
  - c. Time/ distance to services

*When you are sick, where do you go for help?*

*Have you ever gone to the hospital?*

*Have you ever seen an amchi?*

*Who in the family/ household decides what to do when someone falls sick?*
- V. Satisfaction with services received
  - a. Allopathic
  - b. Traditional

*When you went to \_\_\_\_\_ did they help you fix the problem?*

*Have you had to return for help with the same issue?*

*Would you go back for help?*
- VI. Solutions to improve health and resources available
  - a. More facilities
  - b. More understanding/ acceptance in the community and from the government of you beliefs and preferences

*What do you think would help you and the community stay healthy (and live longer)?*
- VII. Stories from past

*When was the last time you were sick and what did you do?*
- VIII. Perspective of the medical providers

*What are the most common health issues in the community?*

*What are the most serious health problems in the community?*

*Do you think the health system works well?*

*What community education activities do you do?*



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