Prevailing traditional health care services in Western Ladakh, Indian Trans-Himalaya

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Research

Abstract

Background: There has been a spurt in revival of Traditional Health Care Services (THCS) in different parts of the world due to increasing awareness about their importance and the initiatives taken by the local governments. Ladakh, located in the Indian Trans-Himalaya represents an ethno-cultural landscape with well-established history of use of traditional medicines in healing of different ailments. However, several THCS so far remained informal and have not been documented properly. The present study aimed to assess and document the status of three different THCS *viz.*, *Amchis*, *Akhons* and *Shamans* in western Ladakh.

Methods: Both qualitative and quantitative data about the 36 *Amchis*, 53 *Akhons* and 21 *Shamans* was collected through questionnaire surveys, semi-structured interviews and participatory appraisals in three valleys of western Ladakh were organized.

Results: The *Amchis* and *Akhons* were mostly middle aged and older men while *Shamans* were mostly young women. All the three healers were generally illiterate with weak socio-economic status. *Amchis* and *Akhons* were more experienced as it was their main profession and received the knowledge hereditary. *Amchis* and *Shamans* were mostly Buddhist while *Akhons* were Muslim. These traditional healers treated 17 different ailments.

Conclusion: The local population of the western Ladakh reported that most of the sub-centers and primary health centers lack medical equipment, drugs, and skilled workforce. Due to deficiencies in health care services the use of indigenous healthcare practices is common. Efforts should be made to fortify THCS by collaborating with modern medicine systems to improved local health care. Of all the THCS, the *Amchi* system or *Sowa-rigpa* seems to be the most codified and might therefore be the most logical one to be integrated into the public health care system.

Keywords: Traditional health care system, *Amchi*, *Akhon*, *Shaman*, Western Ladakh

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Background

Traditional medical systems for the primary health care are very common worldwide, and traditional medicinal values and practices have always been a fundamental component of many cultures (Bardwaj 1985). Due to deficit of contemporary health care facilities and the proved efficacy of traditional treatments, almost 70-80% of world population still count on it (Caniago & Siebert 1998, Kuniyal *et al.* 2015). In recent years, initiatives taken by the local governments in different parts of the globe have led to a continuous increase in the demand for traditional health-care services (THCS). Traditional medicine (TM) has a long history in India and is well established and integrated into the country's overall medical structure (Lodha & Bagga 2000, Hyodo *et al.* 2003). In India TM comprises especially Ayurveda, Unani, Siddha, Yoga, naturopathy and several other locally well-known practices including *Sowa-rigpa*, which has long been widely practiced in the Ladakh region and has been officially recognized in 2011 (Kunzes *et al.* 2012). The local population of western Ladakh has complex accounts or many dimensions of illness perceptions, health care beliefs, and practices. People's views of health and sickness can provide insight into their health care alternatives and health-seeking behaviors (Hallpike 1972, Weinman 1997, Heijmans & Ridder 1998, Heijmans 1999, Kaba 1993, Hagger & Orbell 2003). In Ladakh, ethno-medical beliefs and practices are still prevalent. Their continued existence suggests a high level of cultural continuity as well as a chronic underutilization of most biomedical health treatments (Kloos & Zein 1993). Healers in various healing methods combine magico-religious rituals with empirical approaches, frequently incorporating medicinal herbs and holy water in their treatment plans (Dejene 2013, Kloos *et al.* 2013). Ladakhis' worldview and belief system are inextricably linked. The local population is close to 275000 people, most living from what they manage to grow in their gardens and agricultural fields. People in the study area reported that most health posts and private clinics lacked medical equipment, drugs, and trained and skilled manpower. As a result, people use traditional healers or treat their health problems themselves. The deficiencies in health care services contribute to the use of indigenous healers and treatments. The Traditional health care services include herbal healers (*Amchis*), religious healers like *Akhons* and *Shamans.*, The preferred service in most of the parts of the Trans-Himalaya is *Sowa-Rigpa*. This health care service is a combination of traditional science, art, and philosophy, but also associated with religious elements from Buddhism. *Sowa-Rigpa* is intensely entrenched in the culture of Ladakh. According to the Ladakh Society for Traditional Medicine, it was the only type of medicine that many people in isolated communities had ever experienced until the 1960s. In the past, the residents of Tibet, Ladakh and Lahaul-Spiti also often practiced *Shamanism* for healing ailments, which was widespread in northern Asia under the name *Ban* (Kala 2005).

While there are several studies on *Amchis* or *Sowa-Rigpa,* so far to the best of our knowledge no one has reported in detail on the Traditional healthcare practitioners, their family profile, social and economic status and information on the prevalent diseases, frequently in practice in the remote area of western Ladakh. The aim of this research was to evaluate the current state of three radically different major Traditional Health Care Services (THCS), *Amchis, Akhons* and *Shamans* in western Ladakh.

Materials and Methods

Study area

Ladakh, the northern most part of the trans-Himalaya is the youngest union territory of India. The region is known for its rich heritage, monasteries, trans-Himalayan panorama, unique wildlife, high mountain ranges, with broad open intermountain valleys dotted with saline water lakes and hot springs. Ladakh consists of two districts, vis., Kargil and Leh. It is flanked by the Kunlun mountain range in the north and the Greater Himalaya to the south, inhabited by people of Indo-Aryan and Tibetan descents. The word 'Ladakh' came from the local word '***Ladwags'*** which implies the land of high passes and is very aptly coined because of the altitude where it lies (2900 m to 5900 m asl). It is one of the highest inhabited areas in the world. The region is sparsely populated and most of the settlements are typically around the banks of major rivers and streams. It lies between 31◦44′57″-32◦59′57″ N and 76◦46′29″-78◦41′34″ E longitude, spread over 96701 km2 (Figure 1). The region shares its borders with Pakistan occupied Kashmir and Chinese occupied Aksai Chin in the North-West and North respectively, while in the East it shares boundary with Tibet (China) and Lahul and Spiti (Himachal Pradesh) in the South. It hosts three mighty parallel mountainous ranges of the Himalayas, the Zangskar, the Ladakh and the Karakoram ranges. Major population lives on the banks of Shayok, Indus, Suru, Wakha-chu and Zangskar rivers which flows through these mountain ranges.

Western Ladakh landscape forms the headwater of four main rivers systems Suru, Dras, Wakha-chu and Indus. The region experiences an extreme climatic condition, temperature ranging from +30 to -35°C. Most of the part of north-Western Himalaya, receive heavy snowfalls during the winter. Ladakh has total population of 2.90 lakhs. Out

of which Leh district has population of 1.47 lakhs with decadal growth rate of 25.48% while Kargil district has population of 1.43 lakhs with growth rate of 20.18%. Literacy rate of Leh is 80.48% as compared to Kargil 74.49%. Population is mostly in rural areas and comparing to Leh's urban population of 42.96 percent, Kargil has only 8.89 percent of population living in urban regions. The economy of Ladakh rests on three pillars: the Indian Army, tourism, and civilian government in the form of jobs and extensive subsidies. People of Ladakh rely mainly on subsistence agriculture. People earn their livelihood through subsistence agriculture and pastoralism since majority of the population dwells in the rural sector.

The study area was delineated based on the distribution of three different socio-cultural groups in three valleys. It is distinguished by 20-30 mm rainfall/snowfall, 6-7 months subzero temperatures (minimum winter temperature ranged from −30 to −70 ◦C at various localities), harsh and craggy topography, and low humidity 20-42% (Kachroo 1977). The present study was carried out in Suru, Wakha-chu and Lower Indus valley which are located in the northwestern part of Ladakh (Figure 1). These valleys are situated between 2700-5300m above mean sea level and are more fertile than other regions of Ladakh.

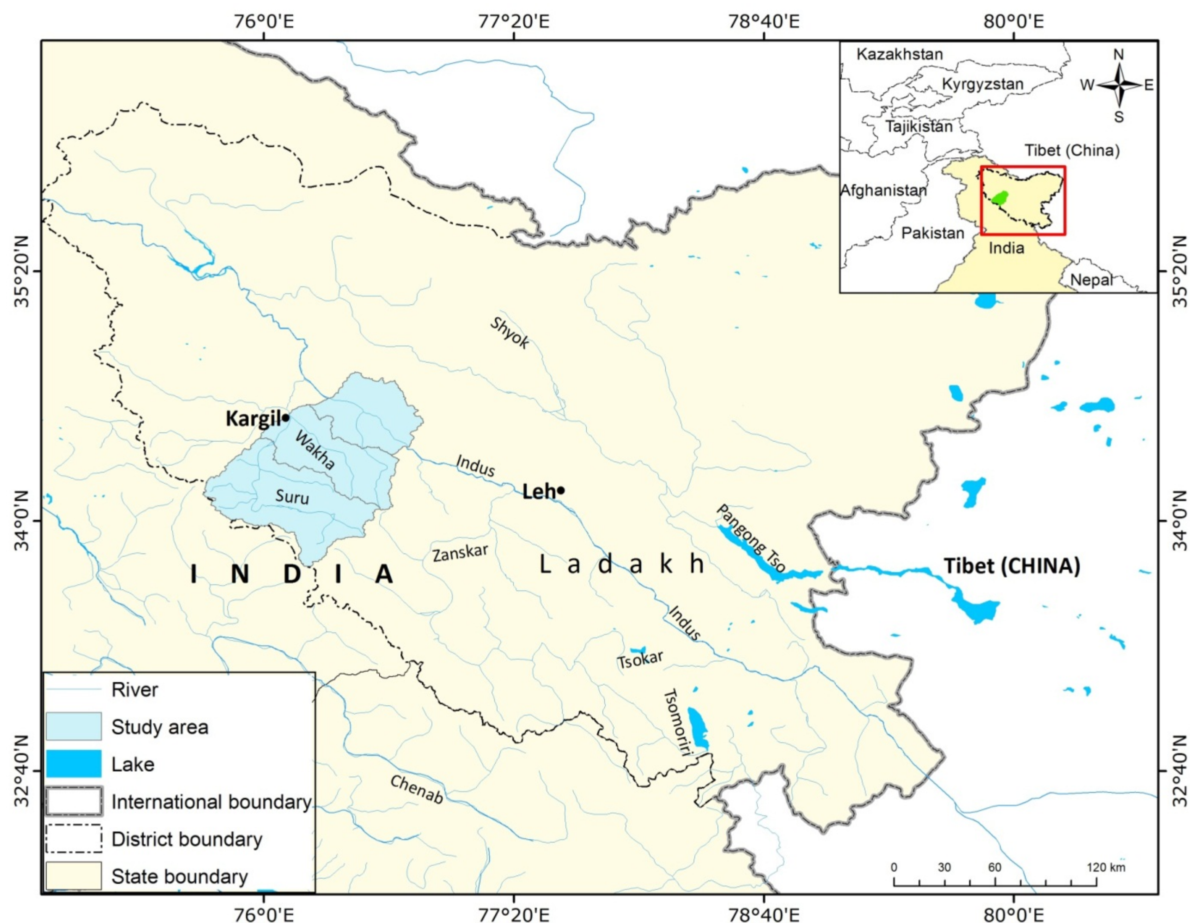

Figure 1. Study area; Three valleys Lower Indus, Wakha-chu and Sur

Sampling procedures, intensity and data collection

During the reconnaissance survey, preliminary data was collected on demography and the number of professionally trained as well as amateur healers in the study area. In order to document the THCS in three valleys *viz.,* Wakha-chu valley, Lower Indus valley and the Suru valley, questionnaire surveys were carried out in the study area. The snowball sampling method was used for the target samples i.e., *Amchis*, *Akhons* and *Shamans* (Goodman 1961, Spreen 1992). After a reconnaissance survey, 81 villages were selected for the present study. First village heads were interviewed to know the number of traditional health care practitioners (THCP). Questionnaire survey and interviews of healers included their name, family details, age, gender, education, village, hereditary, year of study, experience, transfer of knowledge, specialization, resource use i.e. animal, plant and stone in their treatment plan, Government allowance, barter, clinic and expenditure. In order to assess the traditional knowledge among various

age groups, traditional healers were categorized into four age classes, i.e. 20-30 years (new generation), 31-50 years (adult), 51-70 years (middle aged) and above 70 years (veterans). Traditional healers were interviewed on different parameters such as education, income and the source of medicine. Both qualitative and quantitative data were recorded. The information on the number of health care practitioners, their family profile, social and economic status, information and treatment on the prevalent diseases were collected. A comprehensive literature review was conducted in order to compile numerous traditional practices and beliefs for treating various diseases.

Validity and reliability

Impingement of personal bias was excluded as much as possible. The process of data collection was done in either winter, beginning of spring or late autumn when people have enough time to participate in the interviews. During the summer, they were busy making their livelihood. The questions were translated into Ladakhi for those participants who could not understand English.

Analysis

Parameters such as age, gender, education level, years of experience, socio-economic standards were quantified and compared across different classes. These parameters were compared to the level of knowledge among traditional healers. Prevalence of disease was determined on documented information regarding the number of patients visited during last three years from different PHCs. Disease prevalence was also obtained from the *Amchi*, *Akhons* and *Shamans*. The Use Value (UV) was estimated to show the relative relevance of the species that are known in the area by the *Amchis*, *Akhons* and *Shamans* as:

$$UV = \sum U/n$$

Where, UV is the number of citations per species, and 'n' is the number of informants (Gazzaneo 2005).

Results and Discussion

Qualitative Data

Practices and treatment techniques

Traditional healing systems in Ladakh belong to 3 major groups as discussed below. These qualitative findings are based on previous studies and the interpretation we observed during our study.

Amchi practice *Sowa-Rigpa*, which is a codified, scholarly medical science practiced extensively from Siberia and Mongolia through Tibetan regions of China, Bhutan, Nepal and Indian Himalaya (as well as worldwide). It uses complex, multi-component drugs based on established pharmacological texts to cure many disorders, which are clearly described and specified in the textual canon.

Amchis are the traditional healers who use extracts of plants or animals as medicine to treat a wide range of diseases. Their treatment techniques have many similarities to Ayurveda and Tibetan Healing Systems, yet they have their own unique methods of treatment. Different methods of treatment used in *Amchi* System have already been discussed (Kunzes *et al.* 2012).

Amchis' medicinal preparations are usually made up of 3 to 115 substances. The powder (*Chema*), tablet (*rilbo*), paste (*ldehgu*), Oil (*Snum-mar*), ointment (*chukma*) or decoction (*thang*) are the end products. The most commonly used medicine is *Dasbusumthang* prepared from *Aru*, *paru* and *ckuru* (*Terminalia chebula, Terminalia bellirica* and *Emblica officinalis* respectively) was used for curing common ailments like cold, flu, headache etc. The *Amchi* System has over 1000 herbal compositions and recipes (Dorji & Morisco 1989). Eighty-nine percent *Amchis* made their own medicine, while eleven percent relied on drugs produced by the professional Tibetan drug companies. In this paper we will be focusing more on the *Amchis* who had gained their knowledge (89%) from their ancestor and who makes their own medicine.

Akhons. *Akhons* are the Muslim faith healers who treat people using plant and animal parts and mineral substances not as medicine but a medium to divert people's minds with hymns based on social, cultural and religious heritage as well as current knowledge, attitudes and beliefs about physical, mental and social well-being as well as disease aetiology. *Akhons* actually indicate syncretism, an interpretation of orthodox Muslim society in a way to reconcile with traditional culture.

The majority of *Akhons* used plants in the form of smoke or coloring agents to treat patients. They had no scientific techniques, and their methods are mainly based on spiritual healing. They e.g., use paper strips inscribed with religious mantras to treat patients. The inscription is different for different diseases. Sometimes it also involves amulets (*Tabis*) as a part of their treatment. The plant parts used arweree seeds, flower and fruits. Most *Akhons* collected these plants from the wild (ca. 2-5 kg of plants every year for their).

Shamanic healers: *Shamans* engaged in highly individualized and localized spiritual practices, which were either passed on in families or self-generated, without well-developed medical theories and without using medicinal materials. Shamanic healers are called *Lha-ba* (male) or *Lha-mo* (female) in Ladakh. The word *Lha* literally means a "divine person". It is believed that *Shamans* embody spirits or deities during trance states. These *Shamans* were of 3 types. Village *Shamans* (*Yul-Lha*) who protect villagers from evil spirits, Monastic *Shaman* (*Rhunglha*) serves the whole community and *Khim-lha* or *Nang-lha* practice individually oriented healing sessions.

The main constituents of the Shamanistic healing consist of barley, rice, *Juniperus* spp. and *Waldhemia* spp. used during the Shamanistic rituals. *Shamans* (*Lha*) start preparing for the Shamanistic ritual after washing their hands and face and arranging offerings for the altar. While praying, the *Shaman* enters the room, wearing the *Shaman* dress consisting of a five-sided crown and silk attire. During the process, some of them conceal their face with a cloth. They carry a *damaru* (little hand drum) in one hand and a *dorjay* (*Vajaraya* in Sanskrit) in another with a *tilu* (bell) which they keep ringing between reciting the mantras. They then set up a slow rhythm with the drum; begin to chant the mantras, while rocking back and forth. As the speed and the sound of the chanting are increased, a hypnotic atmosphere was created. The *Shaman* sucks the illness from the patient's body and spits the black fluid into a bowl. They treat all types of patients whether suffering from a headache, toothache or many other diseases. After the treatment, the *Shaman* bows to the altar and then suddenly slumps to the floor in silence and the ceremony is then over. The *Shaman* then returns to normal life does not remember his state of trance. *Shamans* also use plants but not as a medicine but as smoke or fumes which help the patients to get rid of their unknown disease. There are 15 plants used by *Shamans* during the Shamanic healing (some of these plants come from outside Ladakh).

Quantitative Data

The socio-demographic profile of the THCS of western Ladakh is given in Table 1. Overall 32.8% healers were *Amchis*, 48.2% were *Akhons* and 19 % were *Shamans*. The data revealed that the *Amchis* and *Akhons* were mostly middle aged to old (30-70 years), only 14% *Amchis* and 2% *Akhons* were in the age group of 20-30 years, while *Shamans* (95%) were young to middle aged (20-50 years). *Amchis* were mostly men (89%), and *Shamans* were mostly women (81%), while *Akhons* were only men (100%). The Wakha-chu valley had the highest number of *Amchis* (67%) followed by the Lower Indus valley (17%) and the Suru valley (16%). Largely the *Akhons* (69.8%) and *Shamans* (66.6%) were from Suru valley (Fig 1).

Most service providers known as the THCP were illiterate or had only religious studies. Of them 44% *Amchis* were not educated; 39% had passed secondary school (grades 10 or above) and 11% completed only primary education (under grade 5). Only 6% had completed the Bachelor of Tibetan Medicine at the Central Institute of Buddhist studies, Leh. Out of a total 53 *Akhons*, 47% were illiterate, 17% dropped out during primary school (under 5th) and 28% reached, but did not finish, matriculation, while 8% had completed their formal education under Islamic studies in Kargil. Fifty-two percent of the *Shamans* were illiterate, and 43% were in their Senior Secondary, some were still attending school, while 5% had dropped their studies after primary grade. *Amchis* and *Akhons* were experienced healers having experience of up to 40-50 years while most of the *Shamans* had nearly 10 years' experience. In the present study we observed that the socio-economic status of these traditional healers is poor. Most of the *Amchis* and *Akhons* monthly income ranged from 2000 to 5000 INR only and 11% of *Amchis* had a monthly income of more than 5000 INR, while 57% of *Shamans* had monthly income between 500-2000 INR. Most of the *Amchis* (75%) and *Akhons* (66%) acquired the healing profession from their ancestors and transfer of knowledge was hereditary, while *Shamans* (90%) largely gained the knowledge from other sources. During the survey it was found that the *Amchis* (94%) and *Shamans* (76%) were mostly Buddhist, while *Akhons* (100%) were Muslim. THCS along with healing were involved in other professions too. *Amchis* (42%), *Akhons* (40%) and *Shamans* (10%) were only healers by profession, while *Amchis* (33%), *Akhons* (13%) and most of the *Shamans* (76%) were farming along with healing. Besides healing and farming, *Amchis* (25%), *Akhons* (47%) and *Shamans* (14%) were involved in other professions (Table 1).

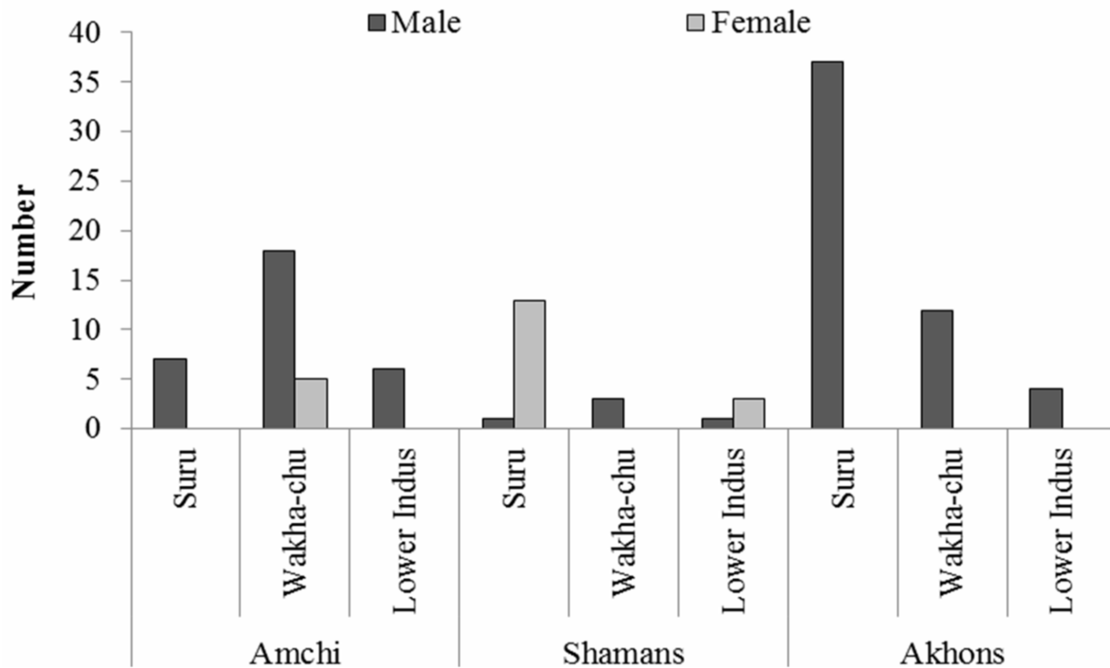

Figure 2. Distribution of THCS in three valleys

THCS treated 17 different disorders. The most common was acid peptic disease, which is a major disorder in Western Ladakh (Figure 2). A poor diet and high altitude are the major cause of this disease as per *Amchis* perception. Upper respiratory infections were the second most prevalent disease, owing to the climate variation and due poor living conditions leading to spread. Depression, headache, dental and acute gastrointestinal disease were other common ailments. Sixty-seven percent of the *Amchis* also treated animal diseases, including injury, diarrhea, constipation and lactation problems. *Shamans* provided treatments for all kinds of physical and psychological disorders. They believe that the doctors cannot diagnose some diseases. It is believed that in such diseases patients accumulate "poison" (*tug*) in their body due to greed and jealousy and only a *Shaman* can heal them. Other than the purpose of treatment, people also seek advice if a dreadful disease strikes them. *Shamans* and *Akhons* also treat animals in the same way as they treat humans. *Akhons* mainly treat diseases such as epilepsy, depression and psychological disorders.

Table 1. Socio demographic Profile of THCS

Indicator	Distribution N (%)		
	Amchi	**Akhons**	**Shamans**
	36 (32.7)	53 (48.2)	21 (19.1)
Age range (Years)			
20-30	5 (13.9)	1 (1.9)	11 (52.4)
30-50	14 (38.9)	24 (45.3)	9 (42.9)
50-70	12 (33.3)	21 (39.6)	0.00
Above 70	5 (13.9)	7 (13.2)	1 (4.8)
Gender			
Male	31(86.1)	53 (100)	4(19.0)
Female	5 (13.9)	0.00	17 (81.0)
Educational Level			
Illiterate	16 (44.4)	25 (47.1)	11(52.4)
BTMS/ Islamic Studies	5 (13.9)	24 (45.3)	9 (42.9)
Primary	13 (36.1)	0 4 (7.5)	1 (4.8)
Senior Secondary	2 (5.6)	0.00	0.00

Years of Experience			
1-10	8 (22.2)	7 (13.2)	16 (76.2)
11-20	8 (22.2)	14 (26.4)	3 (14.3)
21-30	9 (25.0)	20 (37.7)	0.00
31-40	5 (13.9)	10 (18.9)	1 (4.8)
41-50	6 (16.7)	2 (3.8)	1 (4.8)
Socio Economic Status			
500-2000	3 (8.3)	1 (1.9)	12 (57.1)
2000-3000	11 (30.6)	17 (32.1)	3 (14.3)
3000-4000	9 (25.0)	32 (60.4)	3 (14.3)
4000-5000	9 (25.0)	2 (3.8)	2 (9.5)
Above 5000	4 (11.1)	1 (1.9)	1 (4.8)
Transfer of Hereditary Knowledge	27 (75.0)	35 (66.0)	2 (9.5)
Other Sources	9 (25.0)	18 (34.0)	19 (90.5)
Religion			
Buddhism	34 (94.4)	0 (0)	16 (76)
Islam	2 (5.6)	53(100)	5 (24)
Profession			
Healing only	15 (41.7)	21 (39.6)	2 (9.5)
Farming with healing	12 (33.3)	7(13.2)	16 (76.2)
Other	9 (25.0)	25 (47.2)	3 (14.3)

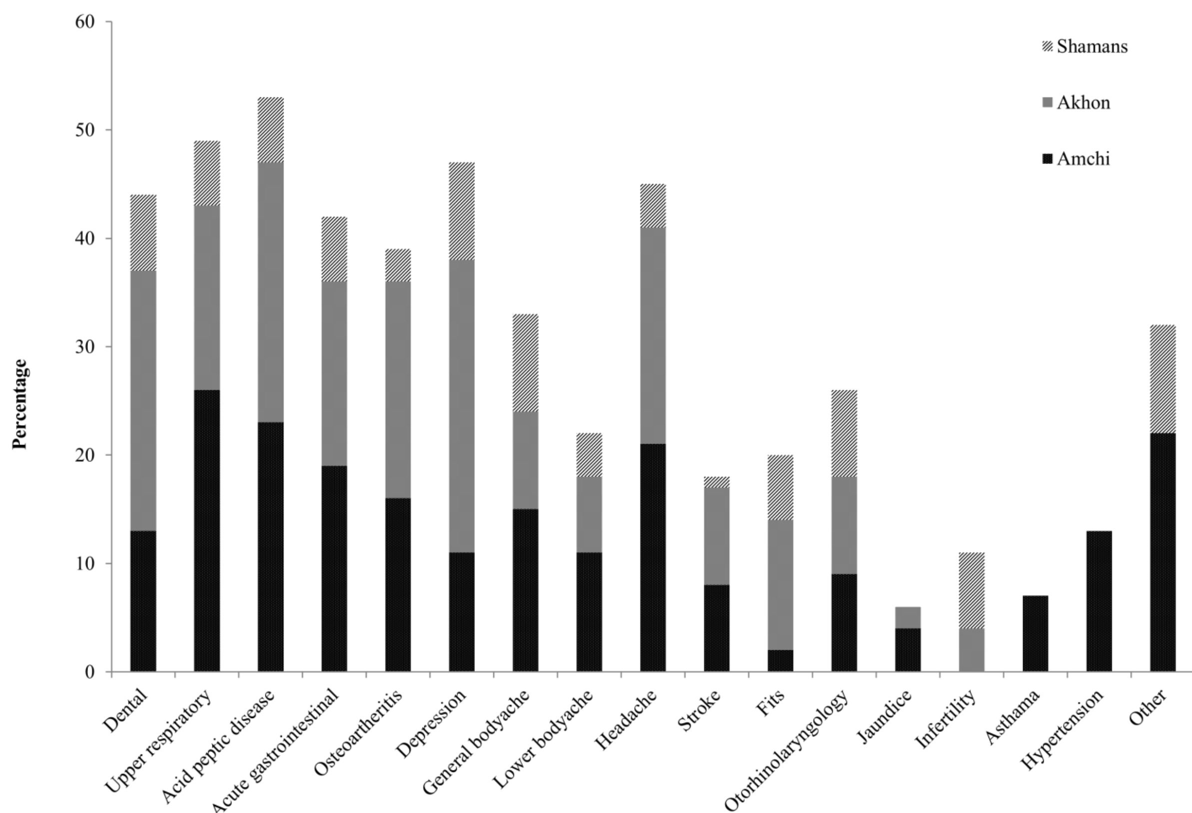

Figure 3. Different disorders treated by THCP

The variation of knowledge of plants among different age groups of *Amchis* is shown in Figure 3. The young *Amchis* (aged less than 30 years) had knowledge of only 20-30 plant species to be used for treatment of ailments, while old age *Amchis* (above 50 years) used over 100 plant species to cure different ailments.

The major plant species used by the healers and their use value (calculated as described in analysis) and the relative importance of the species known in the area by the *Amchis*, *Akhons* and *Shamans* is given in Table 2. *Viola kunawurensis* and *Juniperus recurva*, were rated as the highest use value species whereas for other plants the use value ranged from 0.41 to 0.90.

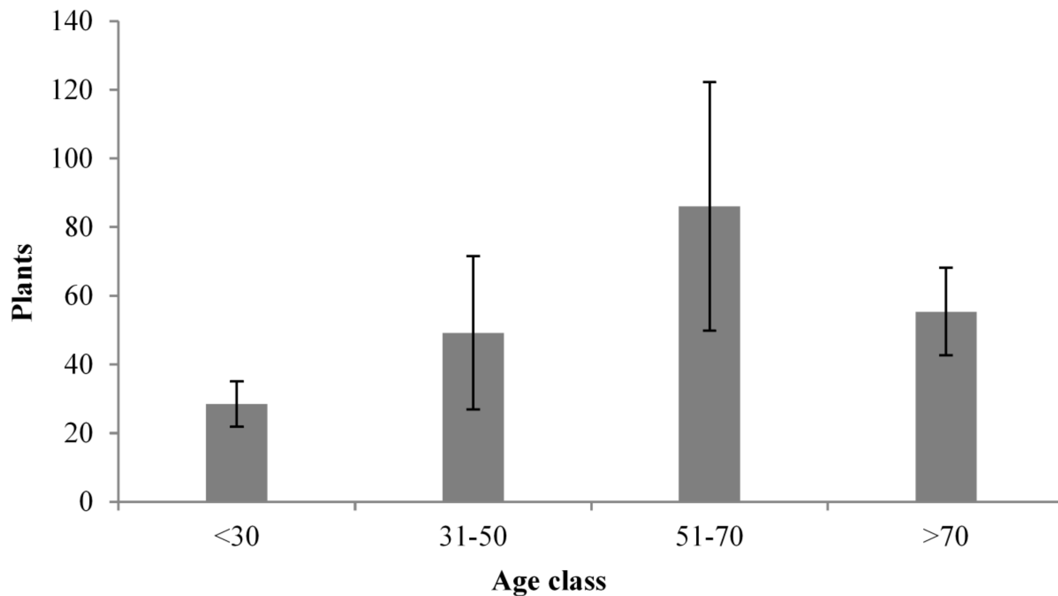

Figure 4. Plants used by different age groups of *Amchis*

Table 2. Species with high Use Report and Use Value

Species	Use Report	Use value
Viola kunawurensis	110	1.00
Juniperus recurva	110	1.00
Waldheimia glabra	110	0.88
Nepeta longibracteata	99	0.90
Swertia thomsonii	96	0.87
Oxyria digyna	80	0.73
Aster flaccidus	67	0.61
Carum carvi	58	0.53
Urtica hyperborea	45	0.41

Discussion

The THCS have been established in Ladakh since the tenth or eleventh century and are influenced by the medical traditions of India and China and are heavily embedded in Buddhist tradition. Cultural features play a very important role in health care system as variables like religion, language, ethnicity, political, and economic aspects have observed diverse health care systems (Geleser 1991) and hitherto cultural values and practice effects the utilization of health care services (Chandri 2002).

In the present study, 110 THC healers from western Ladakh (53 *Akhons*, 36 *Amchis* and 21 *Shamans*) were identified, however, 150 *Lha-mos* and *Lha-pas* were known to exist in 1996 in Ladakh (Burke-Mason 1997). As per the survey in 3 valleys, younger generations were not willing to adopt this traditional profession, although in recent years there was a sudden increase in *Shamans* in western Ladakh and the reason for this, as given by the *Shamans* themselves, was due to the influx of tourism and acculturation.

Men dominated the THCSs since its beginning, according to *Amchis'* interview. Women are rarely a member of this system. However, in case of *Shamans*, most were female. *Shaman* has to follow their family legacy, and there is no rule regarding the gender of a *Shaman*. Unlike *Amchis* and *Shamans*, *Akhons* were only male dominated, as women were never allowed to be part of this tradition.

Amchis are often considered to be "Secular Religious Specialists" (Dollfus 1989, 2003). As far as the educational level are concerned, *Amchis* received their education in one of two ways: through informal lineage education passed down from ancestors, or through official training known as Bachelor of Traditional Medicine (BTMS). Only 6% had studied formal schooling under Central Institute of Buddhist Studies, Leh. Although, most of the *Amchis* have no formal schooling, the healing practice requires knowledge of the *Bhoti* language in order to understand

the written prescriptions and mantras. Learning this method of medicine from senior *Amchis* takes 3-16 years of informal study. Disciples are next evaluated in front of their own instructor, senior *Amchis* and villagers on pulse diagnosis, urine diagnosis, and other key role examinations from four "Tantras". The practice of *Shamanism* does not require any formal or informal education as it is entirely based on physical and spiritual training given by monks. People in Ladakh believe that becoming a *Lha* is not one's own choice but rather they are chosen by oracle or the deity themselves or, in other words, it requires some kind of spiritual attainment to be a *Shaman*. Unlike *Amchis*, *Shamans* are comparatively younger. To become an *Akhons* also does not require a formal education but does require a knowledge of the Arabic and Urdu languages. The experience helps us to understand their proportional distribution, which reveals that very few *Amchis* above 40 years of experience were left. All *Akhons* use plants not for its medical properties but as a part of their treatment techniques. It was difficult to quantify the knowledge of *Akhons*, as their treatment technique was totally based on knowledge of '*Quran*', the holy book of Muslims. Saffron and *Viola* species was considered as important ingredients of the system. Knowledge of *Shamans* was based on their experiences. They do not possess the knowledge of plant and are not involved in medicine preparation. Every culture has its own set of beliefs and practices when it comes to disease, as well as its own system of treatment, which is referred as traditional medical system (Fonaroof 1985). Traditional knowledge in Ladakh was often passed from father to first-born son, while the knowledge of women was based on their personal observations. The lack of interest among the youth in pursuing this profession indicates that the *Sowa-Rigpa* system of medicine is declining (Blaikie 2009). *Shamans*, on the other hand, do not transfer knowledge, although, family tradition requires that children pursue this knowledge. There were only two families (10%) who were following the *Shaman* tradition, while others had no history of *Shamans* in their families. *Shamans* mainly undergo informal training under one of the renowned *Shamans* or *Rinpoches* (head Abbot of the monastery). Usually, a *Rinpoche* approves the possession of evil spirits, which can be sometimes mistaken by the divine powers. Therefore, to separate them from demons who were taking possession of the *Shamans* body (*lus*-gyar), teachings and initiations (*Lha-pog*) are given in consecutive stages by an elderly *Shaman* (teacher) selected by the individual *Lha* or *Lhamo*. In their opinion, there is little to be done against an inherited ownership by *Lhas*, if it is already in their lineage. In certain cases, "*Tum*" a special religious ritual was performed to stop the possession of people who have received the Shamanic vocation. The practice of Shamanism starts with Shamanic vocation, which was known by the person through a mental distress, an acute life crisis, and general emotional stress, which continues for months. In some cases, *Lhas* are allowed to continue being possessed by divine power for the benefit of all living beings. In *Akhons* system, knowledge is transmitted from generation to generation. Although, they have both formal and informal education most (66%) and *Akhons* transmit knowledge over generations. This knowledge transfer tradition is very similar to the *Amchis* tradition.

In the three valleys examined in the study, most (94%) of the *Amchis* were Buddhist. The *Sowa-Rigpa* system originated from Tibet and all of their scriptures and study materials were available in the *Bhoti* script. Despite the fact that these areas were primarily populated by Muslim community, just 6% of healers were Muslim. Most of the Muslims in the valley were converted Buddhists. The discovery of many sculptures from a thousand-year-old civilization in Sangra village (Suru valley) with property papers written in Bhoti script, is proof of Buddhist culture's influence in the past. The practice of Shamanism in Ladakh was based on Buddhist philosophy and mainly practiced by Buddhists. The observation on *Amchis* in Ladakh discovered a number of encounters between medicine and religion, even though the practice of medicine itself is fundamentally non-religious, technical and rather based on a big pharmacopoeia (Laurent 2007).

The socio-economic conditions of *Amchis* were not good. Some *Amchis* got an allowance from the Government of India to keep the tradition alive. This amount covers the cost of raw materials for their medicines as well as personal expenses. Only those *Amchis* who were registered with the Government (47%) got this allowance. For economic reasons healers are drawn to other occupations such as transport, drivers, porters, shopkeepers, school instructors, and other part-time workers due to low pay and excessive expenses. High inflation makes it difficult for the *Amchis* to survive. The majority of them are dissatisfied with their jobs, and a trend towards abandoning this tradition has emerged in recent years. *Akhons* are respectable and well known among the locals, but their income is also insufficient to provide even basic needs and hence they are involved in other professions. Due to low income and high expenses, *Akhons* are also inclined towards other occupations such as working as porters, shopkeepers and teaching. In recent years, most of the *Akhon* families have stopped practicing their healing tradition. Most of the *Shamans* were involved in both farming and healing practice. *Shamans* are often not willing to continue the Shamanistic practice when people in the village did not respect them and considered them as lunatics.

The *Amchi* medical system is communally, culturally and environmentally close to the people in Ladakh and further development of this system could strengthen the healthcare sector of this area (Rather 2015). The *Amchis* harvest herbs and the parts, used in *Amchi* system is fully reliant on natural resources (Kala 2005). The level of knowledge of each *Amchi* was measured based on the number of recorded plants that he knew. Ladakh *Amchi* system of medicine has excellent knowledge of uses of the local medicinal plants for different ailments (Namtak 2018)., which was confirmed in the present study.

The fact that older *Amchis* had more knowledge can be viewed as evidence of poor information transfer to the younger generations, which differ not only in their knowledge of herbs and preparations, but also in their expertise in various maladies. Only 19 percent of *Amchis* had experience with fracture, bruises, cold/cough, asthma, acidity and pulmonary diseases, to name a few. In case of *Shamans* and *Akhons* the knowledge of plants in sufficient. Given that the Government is not paying any attention to the preservation of the herbal resources and traditional medical system in the state, there is a high probability that traditional medicine will further decline. Testing bioactive compounds and biological activity of the majority favored plant species, as well as evaluating the safety and efficacy of local herbal formulations, has lately been advocated as a way to study and establish a link between THCS and contemporary health care systems (Ojha *et al.* 2020).

Conclusions

Local communities in western Ladakh are still dependent on various THCS for their health care. Of the three systems of THCSs, the *Amchi* system or *Sowa-Rigpa* is the most ancient and scientifically based. However, the number of *Amchi* healers is rapidly declining, resulting in dwindling of the practice, particularly in the Lower Indus valley where knowledge transfer to younger generations is poor. This might be due to their low income and lack of adequate incentives. Lack of proper education and awareness about the importance of THCS in schools may be the main reason for such a change. In contrast, the *Shamans* are proliferating in Western Ladakh. They belong especially to the younger generations and the reason for increase in their numbers (as mentioned by the elder *Shamans*) is that acculturation and modernization have changed the lifestyle, which has given rise to selfishness and a decrease in compassion. The *Akhon* population is also on the rise but there is little chance of their recognition, as they do not have any well-defined treatment techniques and they are more or less similar to *Shamans*.

This study underlines the need for in-depth research into local health traditions and a better education on THCS. Given that local communities in western Ladakh use more than one type of health care services depending on the nature of ailment, availability of the medicine, cost and inner faith, the concerned ministry in the Central Government should invest more on the science and education of THCS. This would not only encourage the traditional healers in all the three fields but also provide a western scientific foundation especially for the *Amchi* system of medicine by addressing the pharmaceutical issues such as quality assurance, evaluation and standardization with good manufacturing practices. Protecting the healers' intellectual property rights is also of high importance.

Declarations

Abbreviations: THCS: Traditional Health Care Services; TM: Traditional medicine; UV: Use Value; THCP: Traditional Health Care Practitioners; BTMS: Bachelor of Traditional Medicine System

Ethics approval and consent to participate: Manuscripts reporting studies involving human participants (the need for approval was waived). The author is the native of the study area where the research was carried out and the questionnaire were answered by the healers with their own will and consent to help their own community. Other things were "Not applicable" in this section.

Consent for publication: The manuscript does not contain any individual persons data, please state "Not applicable" in this section

Availability of data and materials: Requests for data can be directed to the first author.

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