

Ecology and Health: A Study Among Tribals of Ladakh

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ABSTRACT In most parts of India, Multiple therapy systems and a diversity of health behaviour patterns co-exist and Ladakh is no exception. The status, growth and evaluation of co-existing therapy systems have been influenced by cultural ideology, ecology, political patronage, changing social institutions, disenchantment with and romanticization of values represented by therapy systems (or their supporters). In the present paper an attempt has been made to describe the ways in which a common Ladakhi thinks about medicine and how these perceptions effect the utilization of alternative therapy systems. This paper examines the alternative resources and treatments utilized by various population groups in Ladakh. The study reveals a multiple therapy systems. The multiple dimensions of health care are described in terms of medical behaviour of health sector and the practioners, and health care strategies employed by the patient. Medical pluralism may be defined as the synchronic existence in a society of more than one medicine sytem grounded in different principles or based on different world views. In the Indian context the important components of medical pluralism are allopathy, ayurveda, homeopathy, and unani. In the Ladakhi context components of medical pluralism are allopathy or bio-medicine, shamanism (Locally known as Lhawaism), lamaism, and scholarly amchi medicine. Among Ladakhis, choice of therapy depends on illness specific patterns of resort.

Health status of people of Ladakh is related to its habitat, human settlements and amenities available there. Other factors affecting health of the people are historical, socio-cultural, economic and developmental. Ladakh division in the state of Jammu and Kashmir in India, comprising Leh and Kargil districts, and inhabited by different ethnic groups, is remote, inaccessible, resource-poor high-altitude zone in western Himalayas, that witnessed little change or advancement in the operative economic and technological level over the centuries. Till recent times, the region evidently remained a model of human adaptation to an extremely sensitive environment by evolving time-tested methods to meet the challenges. The high-altitude, harsh natural environment of Ladakh is characterized by extreme cold and dryness, high radiation, strong winds, low precipitation, low humidity; and desert-like extensive barren landscape, rugged topography, steep and vertical glaciated slopes, minimal forest cover and mineral resources, few pasture lands at high elevations; and settlements in narrow oases like valleys having limited arable land and limited water for irrigation purposes [Suggesting an encapsulated environment as elaborated by Goldstien (1983)].

In Ladakh, where ecological constraints are high, socio-cultural factors and economic development have been found to have effect on the demographic structure. Natural environmental constrains dictate many aspects of traditional life, especially settlement site and agricultural system.

Ladakh's steep mountainous terrain makes ground transportation difficult. The roads connecting the region to the rest of India are closed for six to eight months each year because of snow. The inhabitants live primarily in small villages scattered over a vast region. The region is extremely poor in conventional energy sources (fossils, fuels and wood) and has almost no industrially exploitable resources. Ladakh's subsistence level agro-pastoral economy, traditional social and religio-cultural systems (extra-somatic medium to counteract environmental stresses) are composite part of the cold desert's ecological system which developed as a totality and a closed system. But, certain significant developments, such as, the accession of Jammu and Kashmir to India in 1947 establishing democratic institutions, uniform laws and regulations; the communist revolution in China bringing an end to the caravan-trade in 1949 and subsequent Chinese occupation of Tibet (leading to the severance of the link with Ladakh); the Indo-Chinese war in 1962 leading to closure of the border and occupation of considerable area by China; and constant conflict with Pakistan giving the zone extreme strategic importance; resulted in a serie of rapid changes - unplanned as well as planned, fast altering the ecosystem and also the population homeostasis of 'pristine' Ladakh of yesteryears, when various natural and socio-economic constraints minimized and slowed down any exogenous or endogenous

initiatives, interferences towards innovations and expansions.

In recent decades continuous massive defence investment and improvement in communications; proliferation of government departments; introduction of policy of developmental activities; provisions for basic amenities; alterations in traditional subsistence economy, its commercialisation and extension of technical know-how through government departments and non-governmental organisations; changes in political and economic expectations, alterations in food habits and material possessions leading to the over-dependence on non-local foodgrains and industrial goods; land reclamation and afforestation, etc., are the major moves behind the changing face of Ladakh. Additionally, decline in the temporal role of religion; introduction of the 'Big Land Estate Abolition Act', the 'Buddhist Polyandrous Marriage Abolition Act', equal inheritance (among siblings) laws, individual rights; and opening of Ladakh to tourism in 1974, (which has led to large tourist influx, predominantly from western countries), are the other major impulses symptomatic of changes in the environment, population dynamics, mobility, economics, socio-cultural values and systems, and communal harmony. The region therefore, evidenced breaking down of traditional systems and regulations of celibate institutions like monasticism, marital systems like fraternal polyandry; estate inheritance modes like primogeniture; as well as family structure; community grouping, co-operation; social stratification; frugality and prudence.

It is also generally perceived that the region has been subjected to frequent conflicts and that the pace of development has been chronically sluggish. Consequently, often the populace have faced considerable impediments, besides being affected by environmental stresses, natural calamities, epidemics and various illnesses. The constraints and difficulties ensued not only from harsh environmental or strategic location of the region, but also from the short-sighted planning and policies, delayed implementation of projects and programmes, preoccupation with strategic matters and apathetic attitudes on the part of the authorities; which has brought about serious regional imbalances. Therefore, the changes witnessed currently in Ladakh, are in a way, deemed to be inevitable in search of development and well-being - important and necessary goals

for all societies and nations. Also segregating Ladakh from such much needed pursuits is unreasonable. But side by side, the alarming facts of accelerated development processes, lure of short-term advantages, population surplus and allied issues, which are undoubtedly posing multiple problems in the 'finite' Ladakh today, must not be undermined and require urgent assessment and correction.

PEOPLE AND SOCIETY OF LADAKH

The People: Ladakh

The people of Ladakh are a mixture of Mongolian and the Aryan races. Ladakh Division is inhabited by followers of two major religions : Buddhism and Islam, 52 percent of the total population is Buddhist while 44.6 percent are Muslims. The Baltis and Muslim Dards professing Islam are inhabiting the valleys of Dras and Suru and the tract about Pashkim, called Purig. These are not geographically separated from the main body of Baltis, which borders on Dras. Then there is an isolated colony of Baltis right in the middle of the Buddhists area only a few kilometres from Leh at Chushut. The largest tract of cultivated land in Ladakh is in great part held by them at Chushut, on the left bank of the Indus. The rest of the Ladakh division is mostly inhabited by Buddhists.

Many languages and dialects are spoken in Ladakh, Ladakhi is spoken by 56 percent of the population of Ladakh. The next important language is Balti which claim 37 percent speakers. Bodhi and Tibetan is spoken by two per cent each and Brokstat (Brokpa) and Kashmiri one per cent each. 62 per cent of the population residing in Ladakh speak an additional language besides their mother tongue.

Scheduled Castes and Scheduled Tribes

The district had negligible percentage (0.33 per cent) of scheduled castes to total population in 1981. In the year 1981, eight population groups, namely, Bot, Mon, Beda, Garra, Brokpa (Dogpa, Shinna, etc.) Balti, Changpa and Purigpa have been declared as Scheduled Tribes.

Ethnic Composition of Ladakhi Population

Ladakh is inhabited by following ethnic groups :

A. Buddhists :

1. Ladakhi Bodh/Bhot/Boto/Bot
2. Gara
3. Mon } Dolba
4. Beda }
5. Changpa (Pastoralists of Changthang)
6. Brokpa (Buddhist Dards)

B. Muslims :

7. (a) Balti, (b) Purigpa
8. Argons
9. Drokpa (Muslim Dards)
10. Tibetans (Recently colonized in Ladakh)

Apart from these groups, Ladakh is inhabited by Christians, Hindus, and Sikhs. Some of these groups are characterized by specific occupation, dress code, language, mode of life while rest have more than one occupation. An average Buddhist village has one or two families of Gara, Mon and Beda, while the rest of the population is of Buddhists Bodhs, which are referred as Ladakhis. The word Ladakhi does not correspond to each and every person inhabiting Ladakh, it is only the privilege of Buddhist Bodhs, signifying a specific ethnic group. The Ladakhis are characterized by the high cheek bones, flat face, eyes with epicanthus folds, wide and broad nose, scanty body hair growth and straight to slight wavy head hair. The Ladakhis speak Ladakhi akin to Tibetan. Bodhi is their script. Salient features of the population groups in Ladakh are given in table 1.

The ethno-historic characteristics of the various population groups represented in Ladakh are as follows :

BUDDHIST

1. *Bot, Bodhs (Scheduled Tribe)*: They belong to the Mongoloid (descendants of Mongols of Central Asia) ethnic stock and form the Leh district. They inhabit the area between Skara-Igo to Taru-Umla including Leh town to Achinabang, Nubra Valley, along the Srinagar Leh highway and the Zaskar region of the Kargil district. All Bots-Bodhs speak the same language of the Tibeto-Chinese group commonly known as "Ladakhi" but there are local variations in respect to some words and pronunciations. The devotion of these people to their religion consisting of four sects is profound and intense. The sects Nigmpa, Dukpa-Kargyut and Sanskia are known as Red sect and Gelugpa the reformed Yellow sect. Their main occupation is agriculture and they grow

mainly barley and wheat. A few of them grow vegetables and fruits also. Buddhism does not recognize any caste system but some differentiation is made on the basis of social and occupational considerations.

2. *Gara*: The Gara are Mongoloid Buddhists of lower order (*Rignun*) and speak Ladakhi. Their main occupation is blacksmithy and they are found in almost every large Ladakhi Bodh or Bhoto village. Between Gara and other ethnic groups in the village there is a specific kind of relationship which resembles *Jajmani* (patron-client) system of caste society of plains.

3. *Mon*: Mons are Ladakhi speaking Buddhists, occupying a lower status (*Rignun*) in the social hierarchy of the Ladakhi society. They are professional drummers and musicians but few also grow barley, wheat in their small land holdings. It was stated in a recent report that the population of Mons in Leh district is 873 and forms 1.17 per cent of the total population of Ladakh. The term 'Mon' has been used for water dwellers by Tibetans. They contributed largely to the development of Ladakhi irrigation system.

4. *Bedas*: They too belong to the lower strata of the Ladakhi society. A family or two of these are found in every village. Bedas are pipers but have taken to agriculture on small land holdings. Bedas are 319 in number. They are Buddhists as well as muslim and form 0.43 per cent of the total population of the Leh District (Tribal Census of Ladakh, 1991, Registrar General of India). The term 'Beda' is derived from the Tibetan word *be* and *da*. *Be* refers to separately and *da* mean reside. Local tradition maintains that the Beda came from Lahul, a long time after the Mon. All Muslim musicians are called Bedas. Muslim Bedas have permanent homes like the Mons whereas Buddhist Bedas are wandering minstrels. Muslim Bedas have some land also while Buddhist Bedas earn their living by playing music only.

5. *Changpa (Scheduled Tribe)*: The Buddhist Changpas are the tribe of tent (*Rebo*) dwelling pastoral transhumants of Ladakh who form an ethnic entity. The nomadic and semi-nomadic Changpa people of the Rupshu plateau are pure Tibetans and it is probably herders like them who first populated Ladakh. Through experience they have mastered the art of not only living but thriving in one of the most hostile environments of the world. They inhabit high plateaus of Rupshu, Kharnak and Karzok. In Rupshu and Kharnak whole community leads transhumant life, while

in Karzok 90 per cent are transhumant and ten per cent lead sedentary life. In Karzok, pastoralism, trading and marginal agricultural are the economic pursuits followed by Changpas. They too belong to the Mongoloid ethnic stock and Changkyet, a Tibetan dialect is spoken by them. They profess Buddhism but their youngmen do not become Lamas (For details see Bhasin, 1996).

6. *Brokpas (Scheduled Tribe)*: Brokpas (highlanders) are Dards the beleived survivors of the pure Aryan race inhabiting the lower Indus valley from Dah of the Leh district to Batalic of the Kargil district. According to historians, they migrated from Dardistan in search of pastures and settled along the lower region long ago in areas which are comparatively warm abounding in apples, apricots and grapes. Some 130 kilometres north-east of kargil, there are villages of Dah-Bema, Hano (Hano Goma and Hano Yogma), Darchik and Garkon, situated on the northern bank of Indus on the road of Baltistan inhabited by Dards. These villages are inhabited by 1920 Buddhist Brokpas (Census of India, 1991). All other Dard groups are Muslims and settled in few villages in Ladakh (Dras village and in north of Kashmir in Gurials and Tibet). The Muslim Dards from Marol in Baltistan to the Buddhist Dards in Ladakh formed a contiguous line along the Indus. They separated during the 17th century when the border between Ladakh and Baltistan was demarcated at Gur-Gud. Buddhist Dards are known as Brogpa/Brokpa in Leh District but Dog-pas or Dukpas in the Kargil district. The Buddhist Brok-pa Dard villages have once again in the last few years been subjected to an arbitrary jurisdictional division as subject of Leh District and Kargil Tehsil. Administratively Dah-Bema, Hano are in Leh District and Darchik and Garkon are in Kargil Tehsil resulting in Buddhist influence in the earlier and Muslim influence in the later bringing changes among the growing generation. Buddhist speak Brok-skad an off-shoot of Dardic linguistic group.

The Brok-pa constitute a distinctive cultural ethnic community nestled in central Ladakh on a offbeat track. They have preserved in their language and social customs many archaic traits of their Aryan forefathers through endogamy and oral tradition. Ethnically, they have no relationship with the Mongoloid-Tibetan strain, otherwise dominant in Ladakh. Surrounded by other ethnic groups on all sides. Ladakhis, Purigpas and Baltis, they are able to preserve certain archaic traits of

language, dress and culture. Though, nominally they are Buddhist, their Buddhism does not conform with the Buddhism of rest of the Ladakh. Their acceptance of Buddhism is superficial (For details see Bhasin, 1992).

MUSLIMS

7 (a) *Balti (Scheduled Tribe)*: Balti are Shia Muslims believed to be the product of the admixture of Dards and Mongoloids. They are originally from the Skardu area of Baltistan and now inhabit the Kargil district including Kargil town. Balti population is also found in the Leh district in certain pockets. During the reign of Jamyang Namgyal several hundred Balti Muslims are thought to have migrated from Baltistan and Purig to Chushot and Shey. The descendants number has Swelled upto 6,000.

Some were descendants of the musicians and servants who had accompanied the Balti princess to Ladakh, when she came to marry Ladakhi Kings Jamyang Namgyal. Others facing poverty and hardships in their own lands, came to Ladakh between the 17th 18th century. The Balti who were Shia, mainly *Nurbakshi*, spoke a Tibetan dialect. They were held in contempt not only by Buddhists but also the Sunnis for whom Persian was the language of culture and religion, and who did not recognise them as "real Muslim". Poor, illiterate and rejected, the Baltis were employed by the Kashmiri Muslims of Leh, or by rich Argons, in lowly ranks. They worked also as butchers, leatherworkers and shoemakers. The woman worked, especially during the harvest. The poorest among them were employed in the thankless job of sorting, carding and washing the *pashmina* and *shatush*. The goat-hair which they separated from the wool was given to them in payment. A few Sayyids or descendants of the Prophet, were wealthy, powerful and became successful merchants. In Kargil Baltis speak 'Balti' language, which belongs to the Tibeto-Chinese family and preserved the archaic characteristic of pronunciation. Balti is a language without a script. There is a hazy racial recollection of the language once having had a script and this dates from Buddhist time. However the population being Muslim, Urdu, Persian characters are also used for writing. Their main occupation is agriculture and agriculture labour. Horticulture and animal husbandry are some time marginally undertaken. They too have some occupational

Table 1: Salient features of the population groups in Ladakh

S. No.	Population group	Scheduled Tribe/ Scheduled Caste/ Community	Religion	Language family	Occupation
1.	Bodh	Scheduled Tribe	Buddhism	Tibeto Chinese	Agro-pastoral
2.	Gara	Scheduled Caste	Buddhism	Tibeto Chinese	Blacksmithy
3.	Mon	Scheduled Caste	Buddhism	Tibeto Chinese	Carpentry, drummer Musicians
4.	Beda	Scheduled Caste	Buddhism	Tibeto Chinese	Pipers
5.	Changpa	Scheduled Tribe	Buddhism	Changkyet (Tibetan)	Pastoralism
6.	Brokpa (Buddhist Dards)	Scheduled Tribe	Buddhism	Brok-skad (Dardic)	Agriculture, horticulture animal husbandry
7.	Balti, Purigpa	Scheduled Tribe	Islam (Shia Muslim)	Linguimstic group Batti (Tibeto-chinese)	Agriculture, agriculture labour/ horticulture and animal husbandry
8.	Argons	Community	Islam Sunni Muslims)	Tibeto Chinese	Trading/ agriculture
9.	Drokpa (Muslim Darda)	Scheduled Tribe	Islam (Sunni Muslims)	Shinna (Dardir)	Agriculture Linguistic group

stratification, with chiefs and nobility forming the highest rank followed by commoners. Those engaged in menial jobs constitutes the lowest. It is suggested that they were earlier Buddhists, but long back converted to Islam when mass conversion took place, after Mirza Haider Daughlat invaded Baltistan. Baltis profess Shia faith of Islam, therefore, they are sometimes referred as ‘Shias’. They are quit conservative and orthodox, and mostly do not partake any thing touched by non-Muslims. Music, dance, entertainment are still avoided unlike the Bodhs. In villages, mosques often serve as focal points. In cases of illness, calamities, ‘Maulvis’ and ‘Aghas’ are consulted. Much of the non-official activities embarked upon by individuals or groups are planned and sanctioned by these religious heads. Aghas are their religious leaders all of whom are Sayyids. The word of the Agha is the law for a Shia. The cult of ceremonial cleanliness, an essential part of their faith, as observed by them is unique. Anything touched by a Buddhist or a Hindu is shunned by a Shia-Balti. This even applied to a chunk of meat exhibited in a butcher shop. If is unknowingly touched by a non-Muslim customer, he is severely rebuked by a owner for contaminating the things. This restriction of accepting any thing from a non-Muslim Shia is so strong that Baltis were not even accepting liquid medicines from the dispensary.

7 (b) *Purigpa (Scheduled Tribe)*: The bulk of the Kargil population consists of Purigpas. Originally, Kargil was known as “Purig” and the Purigpas, the original inhabitants and their descendant have been named after their original place. Purigs too claim themselves to be Baltis but Baltis refer to them as Purig-pa. They profess Islam. Their dialect is a mixture of Ladakhi and Balti. The main occupation of this population is agriculture and they grow barley, wheat and peas.

8. *Argons*: Argons are the descendants of immigrants from Kashmir valley and Central Asia who intermingled with the local Ladakhi community. The Kashmiri who came from Srinagar in the 17th century were among the first Muslims to settle in the small Buddhist Kingdom. Most were traders, but occasionally they were accompanied by men of religion. In Leh, they met the traders from central Asia. Unlike the Kashmiris, few of them lived there. Most would leave Leh when the caravan season was over. Many of Kashmiris who settled in Leh married Ladakhi women and left progeny of ‘Argons’. Most of them speak the “Ladakhi” language but can also converse in Turkish and Tibetan language. They are found in both Leh and Kargil districts. They profess Sunni faith and are mainly traders. Few, however have taken to agriculture akin to Bodhs.

9. *Drokpa (Scheduled Tribe)* : Drokpas are Dard Muslims who inhabit the cold, bleak Dras

valley. They are also called 'Shin' on the basis of their language 'Shinna' which belongs to the Dard group of languages in the non-Sanskritic Indo-European family. They are also believed to have come from the Dardistan (the Gilgit aerea) but not so long ago as their counter parts-the Brokpas of the Indus valley. Although professing the Sunni faith they are still clinging on to certain customs which they brought with them from their original home. The cultivable land is less in this region and they have to supplement their food stock by importing from Kashmir region.

ECOLOGY AND HEALTH

The problems related to unprecedented and relatively unrestrained expansion of population, previously kept stable by limited and largely unwitting control of fertility, are much complex and threatening in case of Ladakh; in view of consequent pressure on carrying capacity of the area. Buddhists of Ladakh used positive restraints to reduce fertility in keeping with the lower mortality they were already beginning to achieve. Family and marital structure and mode of inheritance maintained population at a low level. Ladakhi's fraternal polyandry wherein brothers farmed their land in extended families in which a group of brothers ran the estate under the leadership of the eldest who was the prime inheritor. There was only one marriage per generation on the estate. Monogamous system with fraternal polyandry limits population while maintaining an effective labour force on the estate.

Another population controlling factor among Ladakhi Buddhists was monasticism. Traditionally, a second son born in the family was ordained to monasticism, implying a marked control on reproductive potential. Combined with polyandry, this produced a surplus of unmarried women. There was some input of illegitimate children to the population. Number of such children was small, and these children remained on the estate of their mother's brother.

Today polyandrous marriages are becoming rare and since it is not a legal form of a marriage* the cohabitation of brother with a wife of one of them is purely informal arrangement of economic benefit. There is change in inheritance pattern. Primogeniture, eldest son inheriting house and farm is the thing of the past. Now-a-days inheritance is associated with neolocal areas, related families may live close by or close-together and regularly share both economic activities and

meals. The breakdown of the monogamous principle and percentage decrease of monks and nuns mean that Buddhists population is on increase. In the last decade around 70 per cent increase in Ladakhi population has been recorded, however CBR 22.4 in the present study is still much less than the State and Indian average of 33.4 and 32.6, respectively.

Among Muslims, the different ethnic groups Purigpas, Baltis, Drokpas and Argons all show different fertility rates. Muslim Drokpas, seem to be comparatively less bothered about small family size, health and sanitary awareness, educational attainments, contraceptive usage thereby registering higher CBR than other groups. Muslims Baltis are more conducive and accommodating towards such issues and are adapting them gradually for their benefits. Muslim Argons, being traders are mostly economically well off and show preference for higher educational attainment and do not see children as an economic asset. As they are mixture of Buddhist females and Kashmiri male traders, they share preference for better living conditions and life style.

Ladakhis are facing rapid population explosion. It reflects a young population structure associated with high degree of morbidity and high rates of mortality. Infant mortality rates among Buddhists and Muslims are 97.6 and 152.8 respectively against India's IMR of 104.0. Ladakhis happened for a long time to do many things that reduced their exposure to disease for reasons unrelated to any such goal. They drank hot 'Gur Gur' tea, brewed with boiled water, and there by made water safe to drink well before the germ theory explained that harmful micro-organisms might lurk in unboiled water.

Ladakhis are engaged in a host of practices that protect them from some of the mortality risk. Recycling of human waste by means that meliorated the risk of disease is one of those. Human waste is mixed with sand and used as manure in the fields. The clinical tetanus in neonates and adults is absent among Ladakhis. Ladakhis claim that they got natural immunity against tetanus or it is acquired through the habit of keeping newborn in *Tsa-nu*, a woollen sack made up of sheep and goat skin. The sack is filled with powdered

* As polyandry was declared illegal by the Buddhist Polyandrous Marriages Prohibition Act of 1988 (A.D.1941) See Laws of Jammu and Kashmir Vol. III pp. 878-881

sieved dung and made warm by placing a hot stone on it. To keep children warm this practise is followed at least for six months. The same dung powder is used repeatedly after drying. Infant mortality rates among Ladakhi Buddhists are high but are lower than Buddhists of Sikkim (177.8) and Buddhists of Nepal (147.4). Among Ladakhi Buddhists the Crude Death Rate (CDR) is 14.3 which is higher than India's CDR of 10.0 in 1994. The economic and social factors which affect mortality are many and complex. They include education, occupation, nutrition, housing conditions, sanitation, public health services, medical services and general living standards. Definitely, the environment, the people are living in and the climatic pressures are taking toll of the lives.

The risk of death varies with the age of an individual. Furthermore, improvement in public health and medical services have been found to effect different age groups to a different extent. Age-wise mortality shows a U-shaped curve indicating a high rate up to age of 14 years and after that a very low rate and a steep rise after the age of 55 years.

Age specific death rates among Buddhists and Muslims of Ladakh show that mortality rate in the age groups 0-4 is high being 39.6 and 36.4 respectively. Mortality rates in the age group 60-64 are 69.0 among Buddhists and 84.1 among Muslims of Ladakh. In the age group 65+ the mortality rate is 111.1 per thousand among Buddhist and 160.3 per thousand among Muslims of Ladakh.

Infant mortality is considered to be fairly sensitive index of the health conditions of a region. Though it is difficult to control the endogenous causes like congenital abnormalities, the exogenous or environmental causes like nutrition, prenatal care, sanitary conditions, incidence of diseases to which infants are highly prone can be controlled and reflects the health measures taken by the community, government and other agencies. Apart from genetic and endogenous factors, biological factors like the age of mother, order of birth, prematurity and birth spacing also have a bearing on child surviving.

Low death rates have been achieved in parts of India, where primary health care procedures, midwifery, maternal education on breast feeding and weaning, vaccinations, oral rehydration of victims of diarrhoea, and antibiotics against respiratory infections have been implemented.

Health supporting utilities are supposed to

have some direct or indirect affect on health status of the people. It was found that mothers do not generally panic when a child is struck by a diarrhoeal episode, especially when such cases are associated with developmental stages of the child (teething, walking and crawling). Most mothers do not seek treatment outside home until the third day. The decision making process is influenced by traditional values, distance to health facilities, availability of other pharmaceutical products and/ or financial resources. However, treatment outside home is sought only when the episode persists and is resistant of home management techniques. Mother's decision to seek health care in modern facilities comes after a complicated process of choices or alternatives. Housing conditions and household attribute, represents health environment at the household level. Type of construction, number of rooms, separate toilet, separate kitchen, cattle shed, bath rooms, chimney in the kitchen/rooms, drainage system/sewerage system, ventilation, general sanitary conditions all represent health environment.

Mortality was found to be related to availability of sanitation, piped water supply, utilization of health services and host of socio-economic and demographic variables at household level.

The area of dwelling is found to have an inverse relation with mortality in general. This is also an economic indicator. The higher social classes are more likely to have larger dwelling areas and people in higher social class have more ability to take curative as well as preventive measures of health factor in bringing down infant mortality. It has been found that presence or absence of sanitary conditions affects the mortality differentials. It was observed that where sanitary conditions were satisfactory, the mortality differentials were low.

General and infant mortality respond favourably to education. It was observed that among Buddhists and Muslims of Ladakh, the educational achievements of both husband and wife affected the infant mortality differentials. The analysis reveals that educational achievements of both husband and wife are significantly associated with infant and child mortality. As expected, the probability of dying declines with age of child and education of mother. In Ladakh, the mother's education is more influential factor than father's education and occupation. In the study area in Ladakh where land-lordship is an important

criterion of social and economic status, the infant mortality differentials were affected by land ownership. The infant mortality differentials were high among landless and were minimum among the people who owned less than 10 acres in both the groups. Both the groups, Buddhist and Muslim, classified by income, showed that the infant mortality differentials were high among those whose income was less than Rs. 10,000/- per annum and minimum in those household where income was more than Rs. 50,000/- per annum. Nature and occupation of both husband and wife is strongly associated with infant mortality.

The study from Ladakh corroborates the theory that social development and various facilities available in the study area attribute to lower mortality rates. As observed that infant mortality is significantly associated with *Pucca* roads, bus services and mass media. When the communication facilities index is high mortality is low.

The analysis of mortality rates of neonatal, postnatal, the infant and child reveal that the distance to government dispensary, public health centre and hospital is significantly associated with the mortality rates. The rates increase as the distance of these facilities increases from the respondent's place. Other factors such as the *Dai* (traditional birth attendants), number of visits by field workers, occurrence of natural disasters and epidemics also show a systematic pattern with mortality rates. The Maternal and Child Health Programme has not been successful in extending service to the target population. In terms of immunisation, only 46.6 per cent Buddhists and 41.4 per cent Muslims have been immunised. Survey data also show that most of the women prefer to deliver at home.

In view of the difficult means of communication and distance of dispensaries from the villages in Ladakh, medical aid is not availed by Ladakhis except in serious cases. However, in areas, despite easy accessibility survey findings show that a sizable proportion of those who were ill did not seek treatment in health centres or hospitals. Ladakhis depend on traditional folk-medicine practitioners who besides relying upon certain occult phenomena deal with various herbs for preparing herbal medicines for therapeutic use. Throughout Ladakh, the people are obsessed with the uncanny unearthly activities of spirits, ghosts and deities. The diseases thought to be

caused by supernatural, demand magico-religious remedies. Ladakhis resort to various magico-religious practitioners for relieving people of death and disease caused and delegated by the wrathful supernatural. Percentage distribution of deaths (1986-88) among Buddhists and Muslims in the present study was reported highest by respondents while availing the allopathic medicine. Though they fail to mention that allopathic medicine was taken as a last resort or in terminal cases. It was found that deaths reported by availing the services of traditional folk medicine practitioners was minimum or negligible. The reason underlying this was that their first choice was traditional folk medicine.

The Ladakhi's response to problems of health and disease has components from various systems of medicine. Components of Ladakhi medical pluralism are Lamaism, Shamanism (locally known as *Lhawaism*), scholarly *Amchi* medicine and allopathy. The study reveals a multiple and simultaneous, usage of home remedies and multiple therapy system.

The religious background, particularly the belief in the fear of evil spirits, the influence of Shamanism, healing performed according to Bön rites, means of protection against evil spirits, amulets, thread crosses, etc., make Ladakhi medicine colourful and multifarious. The plurality enables them to switch from one type of health practitioner to another in search of the best. The Ladakhi who can avail the facility of western (or bio-medicine), do so without being familiar with the theoretical principles of medical system. Although the economic status of the households differ, they show certain similar patterns of illness behaviour. They employ pluralistic strategies not perceiving any conflict among these alternatives, nor do they seem to perceive them as different systems, but rather as variety of options, among which they can choose.

Most usage is sequential but some is simultaneous. For example, an infant who is being given prescribed medicine for diarrhoea may also be taken concurrently to a Lama for the evil eye. Although certain illnesses such as evil eye, are thought to be cured only by folk curers, this does not preclude the use of modern medicine to treat the symptoms. Gonzales (1966) reports that in Guatemalan, the symptoms are treated with modern medicine, while the cause of illness is dealt with through a folk specialist. Traditional (or folk) theories of illness etiology are often

multifactorial and multilevel (e.g. immediate and ultimate levels of causation), which permits the use of different treatment resources for different causal factors and levels (Cosminsky, 1977). As reported by Cosminsky (1980) for Guatemalan plantation, pluralistic behaviour among Ladakhi population groups is pragmatic, often based on trial and error, perceived effectiveness, uncertainty of illness causation and expectation of quick results. In addition to this empirical and pragmatic behaviour, however, is the role played by faith in the supernatural (or spiritual) in curing. As a person is simultaneously a body (his soma), a self (his psyche) and a social being (his polis), so are healers corresponding to three different realms of individual functioning. In other words, a person is simultaneously a body, a self and a social being. Ladakhi Shamanism "pursued a dialogic, relational remedy for its patients through reciprocal relationships that encouraged community, such as in gift giving to spirits and etiologies based on real social conflicts" (Adams, 1992: 154). Ladakhi shaman attempts to resolve sickness caused by the disorder of the "Social self". Lamas and *Amchis* on the other hand claim to cure diseases which arise from disorders of body and mind originating from individual actions and desires in craving and clinging. Excessive anger, greed and lack of discipline in attachment to the physical and social world result in body disorders. Lamas cure with prayers and rituals while *Amchis* cure through the site of the physical body by means of an elaborate diagnostic system and pharma-copeia. The Ladakhi healers emphasize different aspects of Ladakhis self: social (*Lhawaism/Lhapaism*), mental (Lamaism) and physical (*Amchis*). Bio-medical systems as a rule stand in sharp contrast to the indigenous ones, although a study done in Kerala and Punjab has suggested that there are numerous indigenous medical practitioners who used western medicine, including penicillin injections (Neumann, 1971: 140-141). Among Ladakhis, no such practitioners exist as *Lhama/Lhapa* are spiritual healers and *Amchis* are traditional herbal doctors, who do not use biomedicine.

The pluralistic medical situation in Ladakh provides flexibility and fills different needs of the population. The folk systems are open as manifested by eclecticism of both the clients and practitioners, who adopt and adapt aspects from an array of coexisting medical traditions. This openness of the folk systems, as Press (1978) point out, is manifested by the acceptance of

inputs from other/alternative health systems, and also inputs from institutional sectors such as religion and the family. According to Landy (1974) the traditional healer role stands at the interstices of religion, magic and the social system and gain its power from the position. This contrasts sharply with the closeness of cosmopolitan medicine, which is "discontinuous from ordinary social process (Press, 1978; Mannig and Fabrega, 1973) and is unaccommodating to alternative systems.

A general quantitative survey on the utilization of multiple therapy systems among Ladakhis gave an impression that they have inclination towards indigenous type. In Ladakh, there are multiple medical systems available to people and the options available to any specific group are many. The acceptance of any or a combination of these forms of therapeutic help depends on a variety of factors.

With their age-old folk medical system, people have been able to survive and maintain the ecological balance. With the advent of western medicine a new system has been introduced and people always react differently to this transplant system. Traditional type of system, which does not allow any scientific exploration, is obviously based on myths and powers that are not within human control, i.e. for such things a supernatural elements may be responsible. Consequently the treatment of the ailment also reflects appeasement of the supernatural powers which are extraneous to the individual (patient). In such a society adoption of new medical therapy obviously will be challenged by the existing system and hence, unless the new system is capable of replacing the traditional values by its efficacy and acceptability, it will not be a success.

From the interviews which were carried out in the health centre, one thing was clear that the patients were coming to health centre only after they had received treatment from their own practitioners. Disease as an area of inquiry and the attitude to curing disease has its special importance vis-vis other areas like status, political power, because of the personal equation and time factor involved. It is a matter of life and death in case of a critical disease and their range of action pattern is limited. It is a crisis response rather than a calculated response. When the human system is out of order all types of irrationalities come into play. Since the responses to critical disease are ad-hoc, they do not reflect the traditional cultural norms.

People modify pre-existing practices if the economic costs are within their reach. People are pragmatic in trying and evaluating new alternatives. In case of health behaviour, the cost-benefit mode of analysis and the empirical evidence help in deciding, whether it is to their advantage or not. There is a change in overt behaviour of the people, but it does not necessarily explain or mean changes in the belief system. Among Ladakhis, it was found that although the traditional beliefs about fertility, pregnancy and abortion have remained unchanged, many births in the study area took place in the health centre or government hospital. The study of Wily (2002) also corroborate this study that there is widespread and increasing usage of biomedical services for prenatal care and birth among women in Ladakh, over the course of the past 20 years. Ladakhis have their own traditional-folk medical system with traditional beliefs and practices. But when they were offered the western or government sponsored medical services they accepted them and put them to the test even if as a last resort. They do not in all cases continue to use western medical services, but they show open mindedness in trying them out. Among Ladakhis, the situation is like what Wagner found among Navaho. Wagner found that Navaho "have a very open, pragmatic, and nondiscriminatory attitude towards various medico-religious options available in time of need. White medicine, traditional chantways, peyotism and even various Christian sects on reservation tend to merge in their minds into alternative and somewhat interchangeable avenues for being used" (Wagner, 1978: 4-5). Ladakhis have a open pragmatic and non-discriminatory attitude towards the multiple medical system available to them and acceptance of any or combination of these depend on the individual or household decision. As far curative medical services are concerned, these are embraced more readily than preventive services, as was seen in the case of immunization. All were not ready to immunize their children as only 43.2 per cent children were immunized in study area, out of which 46.6 per cent were Buddhists and 41.4 per cent were Muslims. The reason for this is that the result of the scientific curative medicine are much more easily demonstrated than the results of preventive medicine. "Cause and effect are easily comprehended when serious illness gives way to no illness in a few hours or days, cause and effect are less easily seen when, in the case of

immunization and environmental sanitation programmes, no disease is followed by no disease" (Foster and Anderson, 1978: 245-46). As there are multiple medical systems available to Ladakhis to opt for, the course of action to follow depends on the situation and condition of the sick. The strategies that underline these decision-making process have come to be called the "hierarchy of resort in curative practice" (Schwartz, 1969). The way in which people structure their personal hierarchies of resort tell us about their preferences.

Among Ladakhis, a sequence of resort does not seem to exist, although the trend is to begin with home remedies to Lama to *Lhama/Lhapa* to *Amchi* as the course of the illness proceeds and become more serious. However, there is also a back and forth movement between resources, or a shorten approach, often based on referrals and advice from relatives and neighbours and other practitioners, which seems to be associated with desperation over the perceived increasing severity of an illness.

In view of the extremely difficult means of communication and distance of dispensaries from the villages in Ladakh, medical aid is not availed by the people except in serious cases. The use of traditional herbs for curing disease is most common in the area.

The area being difficult, the sanctioned posts in most cases remain vacant. Thus, medical facilities are not sufficient to cater to the needs of people. Those who want to avail these facilities often have to travel long distances. This combined with shortage of medicines, results in most of the patients remaining unattended. So the people in interior areas have to depend on their own medical treatment.

In general, the health problems in Ladakh can be grouped into five main categories: a high rate of infectious and water borne diseases, poor environmental sanitation and hygiene, unsatisfactory nutritional status, ignorance about health, and an unsatisfactory health care delivery system. The belief in the interference of a supernatural agency is strong in both the communities. It was seen from the data that when both the facilities (namely modern and traditional) were available in the area people often accepted and availed of the western medicine. Though they go to the Health Centre, side by side they also perform various traditional rituals. Unfortunately, adequate medical facilities are not available in many areas, and people are accused of not accepting these non-

existing medical facilities, In areas where medical facilities are not within their reach, people depend on traditional medical care; herbs are used as medicines along with rituals to cure different diseases. The dependence and confidence on traditional medical practitioners *Lhama/Lhapa* and *Amchis*, and Lamas are the result of faith the confidence among the patients. As the traditional practitioners share the common cultural traditions of the patients, naturally the patients have more faith in them. The system of cause, effect and cure, is thus a circular and enclosed system of knowledge. The cause is a spirit, the effect is spirit possession, and the cure is controlled spirit possession. This system of knowledge provides the manifest of explanation and control in the face of disorder, chaos and inexplicable circumstances. The social function here described is adaptive, or as described by Spiro (1966:120), it (spirit possession) is the basis of "Social stability" in potentially unstable and disruptive social circumstances. It has similar function that witchcraft belief, as described by Evans Pritchard (1937: 63-83), have for many African societies. The beliefs and institutions surrounding spirit possession fulfil the function as noted by Spiro (1967: 121) of providing a "culturally approved means, for the resolution of inner conflict (between) personal desires and cultural norms" (cited from Jones, 1976). Medical system's degree of productivity depends on the effectiveness of its armamentarium and the technical skills of its practitioners. However, in some cases efficacy have little or no positive effect on the productivity of the medical system. It happens in cases where improvements in efficacy are restricted to a small number of people and have a negligible effect on levels of morbidity and mortality of the total population. Improvements in efficacy are made available to population around urban centres for which they can make a difference. However, this means diverting resources needed for improving the health of a larger segment of the total population. For example, this is the situation in Ladakh where the capital absorbing medical intervention demanded by urban centres siphon resources away from the primary health care needs of a much larger rural at-risk population. The net effect is no change or even an increase in overall levels of morbidity and mortality.

Despite improvements in health facilities in Ladakh in the past, no significant improvements in health status could be achieved. Morbidity

pattern in Ladakh shows that the incidence of the diseases is concentrated more among children and old-age people. Sickness among children aged upto five is due to diarrhoeal, respiratory and skin diseases. Most of the diseases causing sickness are highly associated with crowding, widespread poverty, poor housing and sanitation. Low weight at birth is a major cause of child sickness and death. Family size is positively associated with the average number of sick members and the average duration of sickness. Presence of health facilities in the locality do not have any significant differential effect on the family health status as these remain under-utilized for a variety of reasons. The findings of study show that the greater the extent of traditionalism in the Ladakhi society, the wider the prevalence of belief in supernatural powers as causing sickness and higher the rate of consulting traditional healers. We also see, however, that the belief in supernatural causes may exist alongside the belief in natural causes. In case of sickness Ladakhis first avail the services of a traditional healers and if this treatment is unsuccessful he will turn to biomedicine. In case the biomedicine is unsuccessful, he will return to traditional healers. Since traditional Ladakhi medicine draws its strength from the belief in supernatural and Karma, all things that happen to man, both good and evil considered to be the will of God. According to Ladakhis, both health and illness are caused by God, with the help of natural and supernatural powers created by him. Powers of strong faith, courage and great patience are the source of healing. The ceremonies of visiting the traditional healers, have established a relationship of psychological therapeutic dependence on the part of the Ladakhi with regard to healer. This dependence is deeply rooted in their psyche and reinforced and legitimized by the Ladakhi culture. It is important to note the difference between the bodily conceptions in Buddhism and those of biomedicine. In the former the body is seen as part of the universe, inter-connected to all elements of the universe and functionally inter-dependent marking high modernism in medical practice. The analysis seems to indicate that there is some association between ill health and mortality with large family size. However, without taking into account many other factors such as life-style and environmental conditions, one can only regard the above conclusions, as tentative.

The household survey data show that large family size has adverse effects on education and health. In terms of educational achievement children from large families have lower educational achievements than that of their counterparts in small families, although the mother's educational level and income are equally important in explaining educational differences. Such children are more likely to participate early in productive (and money earning) activities, which are closely related to educational level achievements. Participation in labour force and employment are restricted to low paying jobs, without much skill requirements. As adults they are likely to marry off early to someone of the similar economic group. In terms of health those from large families are likely to be badly off because of poor nutrition and inability to afford medical services. Thus, there is a vicious circle difficult to break. The implementation of development programmes is clearly not sufficient to break the cycle. The families themselves need to take positive steps to ensure that they are able to enjoy the benefits of development programmes.

Based on findings of the present study the policy implications are as follows:

General emphasis should be placed on creating public awareness about primary health care both at the household and community level. Indigenous medical practices in comparison to biomedicine therapy are mainly based on the belief system. Hence, the opening of health centres is certainly not enough and the need for cultural factors that tend to an efficient administration of medicine. Traditional *Amchi* system which has stood the test of time is indeed unique and has proved reliable and effective for Ladakhis, must be protected. Traditional knowledge developed out of usage and current wisdom is a creative treasure that needs to be scientifically evaluated and documented. Developed out of centuries of trial and error and handed down the generations, the wisdom about herb based remedies of common diseases as well as serious one is precious. The integration of scientific and indigenous wisdom would help develop technologies which are intelligible and credible to local people. Health facilities, especially in rural areas should emphasize the health care of women and children. While immunization against major diseases has already started, diseases which are related with congestion, contaminated drinking water, poor hygiene and sanitation, could be kept under control if educating the public on primary

health care becomes a part of the local health care services. Greater emphasis should be placed on creating facilities for the treatment and control of infectious diseases which are closely associated with cramming up of family members in a room during winter months at household levels. Given the interlinkage between health, education and occupation, all are important in their own sphere, emphasis should be placed on improvement in all.

While the control of population should be among the prime objectives of the Government's development programmes, in an effort to redeem the adverse consequences of growing population because of breaking up of monogamous system or polyandrous marriages and decrease in number of monks. Greater emphasis should be on creating employment opportunities in the non-agricultural sector. Distribution of educational institutions across different geographical areas should cover, rather on the relative concentration of school age children in the respective localities. Rather than constructing new facilities, under resource constraints, maximum possible effort should be made to maintain properly the existing institutions.

Given the interlinkage between health, education and occupation, local institution could be used for multiple purposes. For instance, the existing school building could be used as health centre, or as a training institute for new technology, new crop variety cropping pattern and even for development of local skills.

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