

**Comparison of dental care
in the UK to care provided
to Ladakh, a remote
region in the Himalayas**

330 587



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1.0 Background

1.1.1 Area

Ladakh region is located to the north of Himachal Pradesh in the state of Jammu and Kashmir in India. It is bordered by China and Tibet. It is often referred to as 'Little Tibet' due to its similarities in culture and geography with Tibet. Ladakh spans an area of 97,000 sq kms with its landscape being barren and desert like.¹

The map below shows where Ladakh (the area highlighted in red) is in relation to rest of India.



(Source: <http://en.wikipedia.org/wiki/Ladakh#Geography>)

The altitude of Ladakh spans between 8,200 feet and 14,880 feet with peaks of over 23,000 feet. In Ladakh there are several rivers draining the area, the Indus, the Zaskar, the Suru and the Shyok. Most of the populated areas lie along the area of the Indus River. The mountain ranges surrounding the area are the Ladakh, Zaskar and the Greater Himalaya Range. The capital of Ladakh is Leh located at 11,495 feet.^{2, 3}

The map below shows the area of Ladakh:



(Source: <http://en.wikipedia.org/wiki/Ladakh#Geography>)

Medical and dental clinics were set up in a number of locations, the first being the Tibetan Settlements of Angling and Mehnle, located on the outskirts of Leh. Then clinics were set up in the area of Tangste, located at 13,000 feet which is northwest of Leh and borders the Indo-Tibetan borderland. Finally, clinics were set up in the south where the lake Tso-Morari lies (15175 feet). Tibetan villages lie near the lake, one of which is Karzok. This area is known as the Chang Thang Plateau, which is so remote that there is no recognition of it on maps and has restricted access. Due to the high altitudes, acclimatisation is required in Ladakh to prevent Acute Mountain Sickness (AMS), symptoms of which include headaches, nausea, shortness of breath and tiredness. ⁴

Access to the area is via roads and due to army influence in Ladakh the roads are quite good. Cars, trucks and buses are able to pass through the area, so villagers have means of getting to Leh; however the journeys are long and difficult.



(Terrain in Ladakh)

1.1.2 Climate

The climate shows a varied pattern, as the temperature can drop to minus 50°C in the winter and rise to 30 degrees in the summer months. Between September and March the season closes and the roads are closed off, making it impossible to reach the remote areas.

1.1.3 People

The population of Ladakh is approximately 200,000 people living in the area. The people living in these areas are Tibetan settlers and refugees, and Ladakhi's. Also, in the Chang Thang area, the people living there are called the Changpas who are nomads from western Tibet.^{4, 5}



(Women and child Changpa)

Due to the area being on borderland territory, there is also a large army presence in the area. The main languages of the area are Tibetan, Ladakhi and Hindi. The main religious practices are Buddhism and Islam.¹

Agriculture is the main source of income for the area, especially by growing barley, wheat and peas, and keeping livestock, such as yak, cows, sheep and goats. The animals provide transport, labour, wool, milk and dung (which is the main fuel). Due to the altitude, the growing season only lasts for a few months in the summer. Tea, sugar, salt, apricot and pashimina are all grown at lower altitudes and are exported. In the winter months the temperature can fall to below –15 degrees, therefore the

summer months are the main source of income. Also, tourism in this area provides income and a source of employment. Tourism has increased due to interest in trekking and sporting activities.^{5,6}

The people of Ladakh live in a wide variety of houses, from brick houses to tents. Nomads live in large, movable family tents or in solid brick houses. Due to the low temperatures in the winter, the locals have to burn wood and dried animal dung for heating, and only use electricity for a limited amount of time during the night. In the summer this causes less of a problem.^{6,7}



(A picture showing a typical Nomadic housing)

1.1.4 Dental care

Health care in Ladakh mainly consists of Primary Care Services, which provides free care to the local people. However, in some of the remote areas such as the Nomad villages, health care is limited and it is difficult for the local residents to access the primary health services. Dental treatment is available in Leh civil hospital, the army hospital, private dentists in Leh and the meditation centres. Doctors are trained in extracting teeth, so they carry out most of the dental care. There are no follow up appointments. There is no primary care facilities allocated to dentistry, so local people will visit either doctors or Amchi's. Amchi's are doctors who follow traditional Tibetan remedies to treat patients.

The problems faced in providing dentistry to the Himalayan areas are summarised by the article 'Operation Himalaya', stating the 'Outstanding problems are that the time limits the number of patients seen, only one visit treatment plans can be formulated; there is no follow-up facility and insufficient time for teaching.'⁸

The main problems with dental care are access, as many people live in remote areas, whereby accessing dental care is difficult. Also, dentists allocated in Leh or surrounding areas cannot leave their placements for most of the year due to roads being closed during the winter, and villagers in the remote areas cannot leave in the summer due to their livelihood.⁹

1.1.5 Diet

In Leh, there are a wide variety of cuisines available such as Tibetan, Indian and Chinese food. However, the Ladakhi people mainly eat meat, vegetables and wheat products. Villagers, in the winter drink butter salt tea as it keeps the locals warm. Ladakhi people also drink very sweet tea, known as chai. The local people use dried milk in their tea and other cooking; this is very sweet, as it has added sugar. It is given to children at a young age, therefore gives an explanation of high caries levels.⁹

1.1.6 Oral Hygiene

People in Ladakh have varied oral hygiene. In Leh, many younger people have good oral hygiene and clean their teeth regularly. However, many of the villagers do not have toothbrushes or means of maintaining their teeth, so they have poor oral hygiene. Also, during the winter months the water freezes over, so the local people melt the ice to drink water, so using the water for cleaning their teeth is low on priorities. In the winter many of the villagers use butter and salt or coal and salt, or nothing at all to clean their teeth.⁹

Caries levels are prevalent in these areas, however much of the caries is arrested, due to the high level of fluoride found in the water. As well as arrested caries, staining on teeth is found due to fluorosis.⁹

1.2 Background to the organisation

1.2.1 Himalayan Health Exchange

Himalayan Health Exchange is a voluntary, non-religious organisation that works with the government in order to provide medical care to the people of four regions of the Himalayas and one on the west coast of India. Ravi Singh, a native of the Himalayas living in USA now, set up Himalayan Health Exchange in 1996. Since then medical camps have been set up every year to provide care to an average of 1,200 people at each expedition. Medical camps consist of medical examinations, pharmacy and dental camps, provided by healthcare professionals from all over the world.³



(The Himalayan Health team 2006 – Expedition to Chang Thang Plateau/ Tibetan Borderland)

1.2.2 Expedition to Chang Thang Plateau/ Tibetan Borderland

The programme to Leh consists of a 20-day medical/dental expedition designed to reach undeserved people living in Ladakh and the Chang Thang Plateau. The expedition aims to gain international health exposure; to gain practical skills in a non-traditional setting; to work alongside local health care providers to develop health care delivery; introduce expedition participants to a different culture and lifestyle; and develop awareness of economic, social and health needs.³

The expedition lasted for 15 days whereby 8 days were allocated for medical/dental camps in different locations in Ladakh. Time in between allocated to acclimatisation and travel between campsites.



(One of the campsites)

Around thirty medical/ dental professional mainly from the UK and USA travelled to Ladakh, to work alongside the local health system to provide care. Medical and dental camps are set up in monasteries, community centres and schools. Different specialities are also set up, such as a Paediatric clinic and a Gynaecology clinic so that particular population needs are met.



(Medical camp in progress)

2.1 Objectives

- To observe the outlook to dental care of remote villages in the Himalayan area.
- To gain insight into the differences in resources such as dental materials and instruments.
- To understand how diet and care facilities cause differences in the care required.
- To understand the barriers to care in a remote village and the treatment needs of such an area.
- To see how Himalayan Health Exchange help to overcome these problems and aid treatment of settlers of these areas.
- To understand how dental care in the Himalayas differs from the UK.

3.0 Methodology

3.1 Dentistry in Himalayas

3.1.1 Dental Materials and Instruments

In order to observe the differences, all the materials and instruments were noted and photographed. The sterilisation process was noted through observations.

3.1.2 Diet

The local diet and habits was observed via discussions with the trip organisers, the local people and by researching about the dietary habits. Using research carried out via the Internet and books the diet was noted, allowing analysis into reasons for the prevalence of dental decay, and treatment needs of the area.

3.1.3 Treatment

The treatment carried out during the eight days was noted in a diary format of the patient number, age, diagnosis and the treatment carried out. Appendix 1 shows an example of the sheet used to record the data. Any interesting cases were noted in a notebook and treatment carried out was recorded.

3.2 Barriers to dental care

3.2.1 Questionnaire

A questionnaire would be carried out to observe the barriers, the attitudes, the rewarding and challenging moments of the trip. This questionnaire would be given to the dental team, the organisers and some of the medical staff attending. Six dentists, two of the organisers and two medical students were given the questionnaire. The questionnaire would be given to the participants so an analysis of their experiences of the barriers to dental care and the challenges they faced could be noted. Appendix 2 shows an example of the questionnaire carried out.

3.2.2 Observations

From personal experience, and observations of patient demands and treatment carried out, an assessment of the barriers and requirements of treatment can be made.

3.3 Himalayan Health Exchange

3.3.1 Discussions

Through discussions with the trip organisers, an idea of how Himalayan Health Exchange aids overcome the barriers to dental care and how they aid the people of the area.

3.3.2 Observations

By observing the organisation and how medical camps are set up an indication of how the organisers help the people of Ladakh.

3.4 Comparison to UK

3.4.1 Observation

By noting the treatment carried out in the eight days of dental camp in Ladakh a comparison was made to the treatment carried out in the UK from personal experiences. This includes the types of instruments, the demands of the patients, the sterilisation processes, the materials used and the treatment carried out.

4.1 Results

The dental camps consisted of 5 dental students and 1 qualified dentist, supervising us. Each participant took it in turns to see a patient, and act as a nurse, holding a torch as light or passing instruments.



(The dental team)

The treatment carried out over the eight days was noted in tables, as shown in appendix 1. The treatment carried out in presented in table 1.

Day	Type of treatment carried out					Referral	Other
	Extraction	Restoration	OHI	Scaling			
1	14	4	12	3	0	2	
2	9	7	0	1	6	1	
3	9	0	0	0	1	0	
4	14	2	8	0	2	0	
5	7	0	1	0	0	0	
6(nomadic village)	5	0	25	0	1	0	
7	2	0	68	0	0	0	
8	6	6	3	2	6	2	
Total	66	19	117	6	16	5	

Table 1 shows the types of treatment carried out. The main treatment carried out was extractions (28.8% of the total treatment) and oral hygiene instruction (51.1% of total treatment). Other treatments carried out included restorations, scaling and referrals to Leh hospital. Caries and apical periodontitis were the most common diagnosis that resulted in extraction.

The questionnaire

The questionnaire carried out was used to analyse the experiences of participants of the expedition, and to assess the barriers to dental care in the area. The results for question 4 –6 are presented below.

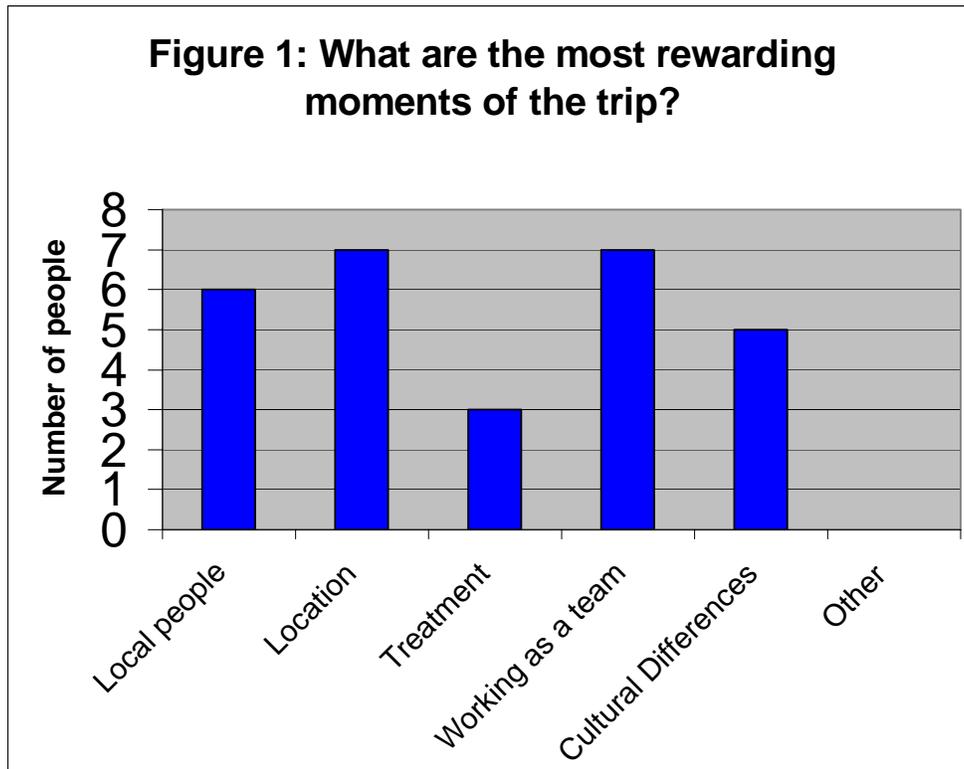


Figure 1 shows the most rewarding aspects of the trip to be the location and working as a team, where 70% of participants thought they were the most satisfying features. Sixty percent of the participants thought the local people and fifty percent thought cultural differences were also rewarding aspects.

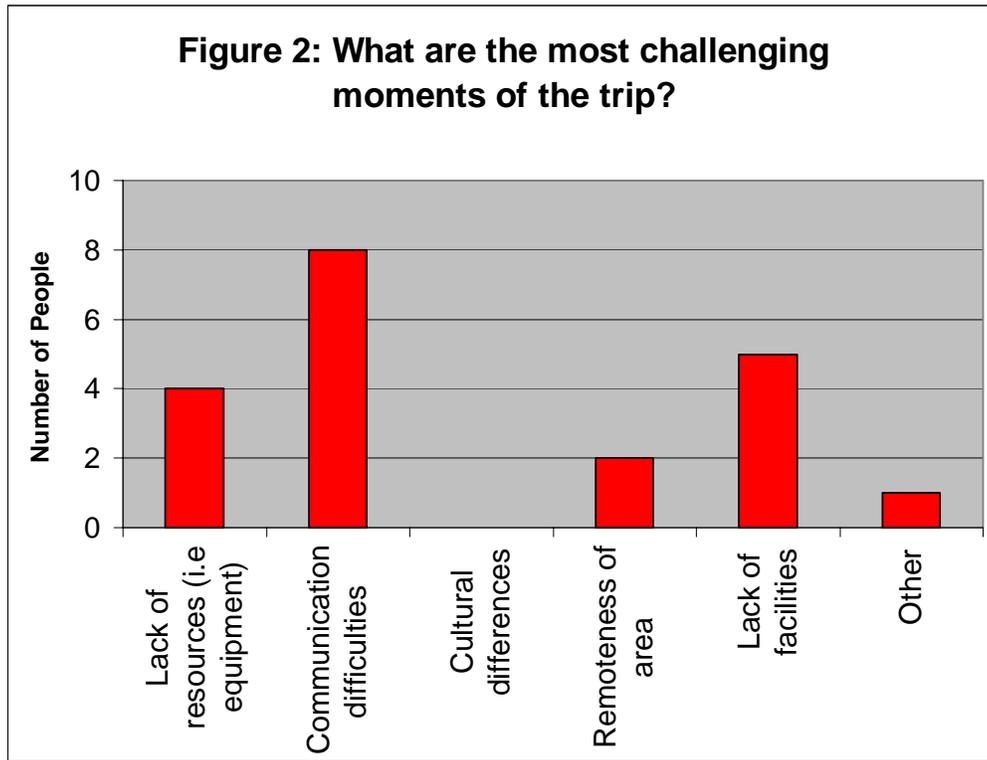


Figure 2 shows the most challenging aspects of the trip to be the communication difficulties, where 80% of the participants found it to be a challenge. Other problematic areas were the lack of resources (40% of participants) and lack of facilities (50% of participants).

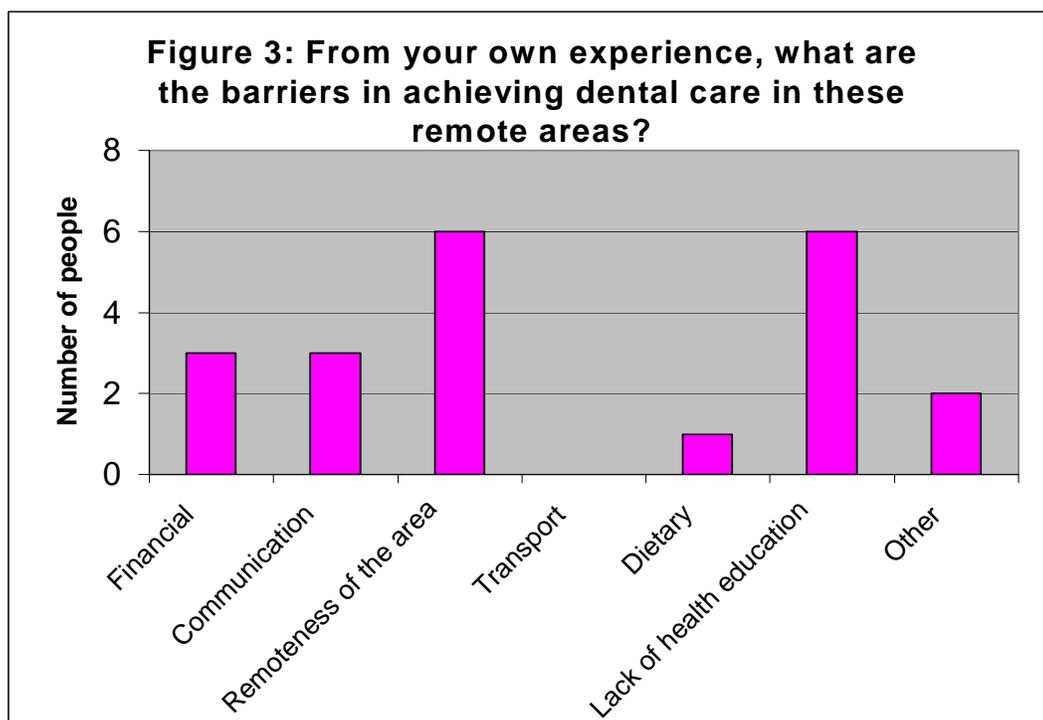


Figure 3 shows the main barriers to dental care as noted by the participants of the trip. The main barrier to dental care was remoteness of area (60% of participants felt this was the case) and the lack of education (60% of participants felt this was a barrier). Other barriers noted by the participants were financial reasons and communication difficulties.

The results for question 1, 2, 3 and 8 are presented in appendix 3 for completeness; these will not be discussed in the discussion section.

Materials and Instruments

The following list is of the materials and instruments used when treating patients in Ladakh.

- Right angled probes, Mirrors
- Local anaesthetic cartridges – Lignocaine with 1:80000 adrenaline, and Citanest with felypressin
- Local anaesthetic syringes
- Needles – short (30 gauge) and long (27 gauge)
- Cotton wool, gauze
- Forceps – a wide variety of types
- Elevators – couplands, cryers and Warwick James
- Flat plastic, Excavator
- Glass Ionomer
- Tooth Brushes and toothpaste
- Gloves, masks, safety glasses and alcohol rub
- Dental Chair and seats – made of corrugated plastic
- Torch as a light source



(The materials and instruments used to treat patients)

Sterilisation process

Due to the lack of facilities present sterilisation consisted of boiling the instruments in a pot of water for 10-15 minutes and then wiped with alcohol rub.



(The pot used to boil instruments)

Diet

In order to observe the dietary habits of the patients, discussion with local people and the trip organisers were carried out. The main dietary products found in Ladakhi diet were:

- Meat
- Wheat products
- Vegetables
- Dried milk
- Butter salt tea
- Sweet tea known as chai

5.1 Discussion

5.1.1 Treatment

The treatment in Ladakh was noted and presented in the results section. The main treatment carried during the 8 days was extractions (66 in total) and oral hygiene instruction (117 in total).

The high number of extractions was due to a number of reasons. First the lack of resources and materials of our dental camp resulted in the fact that the only immediate and effective treatment that could be offered to a patient in pain was extraction. Majority of the teeth taken out were extremely carious or had periodontal involvement, however some teeth could have been restored via other means but had to be extracted due to lack of resources. Secondly, there were no X ray facilities at our campsites, so caries levels, periodontal status and restorability of teeth could not be assessed. Another factor was that the camps were always at different locations, therefore there was no follow up treatment; so only immediate relief of pain was provided.



(An extraction carried out on day 1 of clinics)

Oral hygiene instruction was provided in the form of providing toothbrushes and toothpaste, and demonstrating their use. The first three days of dental camp were near Leh, where most children and adults had better oral hygiene, and had understanding of cleaning their teeth, therefore less oral hygiene instruction was provided (12 people were provided oral hygiene instruction: table 1). The further away from Leh we went,

the more oral hygiene instruction was provided. When visiting a school, on day seven of camps, 68 children were given toothbrushes and paste (table 1).



(A child in the school being given oral hygiene instruction by a team member)



(Day 7: The children at the school visit)

During other clinic sites, oral hygiene instruction was given to both children and adults, especially at the Nomadic village. The people living in these areas did not own a toothbrush or paste; therefore samples were handed out to the children and the adults. It was found that once toothbrushes were handed out that the children would clean their teeth all day continuously and splay the bristles of the toothbrush within one day. Also, at the end of the school visit the teacher collected all the toothbrushes in order to keep them together, even though the children had been using them moments before, so most of the brushes given were mixed up by the end of the day. This showed the lack of understanding and education about oral hygiene with both adults and the children.



(The children at the school visit cleaning their teeth in the playground)

Other treatment given to patients consisted of restorations with glass ionomer, scaling and referrals to Leh hospital. The restorations were carried out on small lesions, where the dental decay could be removed with hand instruments; therefore only few were carried out. Due to limited resources, poor moisture control and limited instruments to pack the material into the cavities, any restorations carried out had a poor longevity. In Leh, there was more of a demand for temporary glass ionomer, as people in these areas had more knowledge and demands for treatment, as 11 restorations were carried out in the clinics located near Leh on day 1 and 2 (table 1). In the more remote areas, fewer fillings were carried out, as there was more demand for pain relief. This can be illustrated by the following:

‘Patients in Leh have high demands and have good knowledge on treatment options, whereas patients in remote areas have less demands and are generally more pain relief orientated.’ (4th year dental student)

Scaling was carried out, however the treatment was ineffective, as many people had built up calculus for many years, and the instruments used to remove the deposits were blunt and unsuccessful. Referrals were made to Leh hospital if an X ray was required, if a tooth required surgical removal, or if a biopsy was required (i.e. soft tissue removal for histological and diagnostic purposes). The problem occurred in the remote areas when referrals were made due to the long distance to the hospital thus many people would not make the journey, and as there were no follow up facilities, patients would be left untreated. Other treatment carried out was abscess drainage and prescription writing of antibiotics or painkillers.

The main diagnosis found was pain due to carious teeth or periodontal involved teeth. Also treatment was carried out mainly on children, the elderly and young women.

Differences to the UK immediately can be noted in the treatment carried out. Options to treat patient involved extractions or by giving oral hygiene to prevent further deterioration. On questioning the participants of the trip, 90% noted a difference between the UK and Ladakh (appendix 3). As stated by one member of the dental team when asked about the differences in dental treatment requirements carried out here compared to the UK. Comments include:

'Not much options to treat teeth, basically just extract!' (4th year dental student)

And

'Higher prevalence of extreme caries, due to limitations of dental treatment to spot the intermediate stages between white spot lesions to broken down teeth that cannot be restored. The only treatment options in remote areas appear to be prevention through oral hygiene or extraction.' (4th year dental student)

The basic dental needs seem to be the same as the UK, of regular dental visits and restorations, however due to the access problems and the lack of dental provisions results in limited treatment options. One response to the differences of Ladakh to UK stated:

'...due to the lack of dental provision in the area, re-treatment or repairs of previous fillings do not occur therefore extractions and temporary fillings are the only option.'

(4th year dental student)

Most patients in Ladakh required immediate pain relief therefore there were less demands on treatment only for pain relief, via a pill or extraction. Many of the children were excited in receiving toothbrushes and paste. The attitude to dental care was illustrated by the following responses:

'People only go for dental care once in pain, very few care about aesthetics and people are poorly educated on oral hygiene'. (Qualified dentist)

Also

‘Children especially enjoyed receiving toothbrushes and interacting with the dentists and as far as I understand, adults were very happy to have pain relieved of a toothache.’ (2nd year medical student)

A number of interesting cases were seen, one being of a ten year old, who had suffered trauma to her lower deciduous tooth (d), which had exposed her permanent tooth (4). The patient had to be referred to Leh hospital, so a radiograph could be taken to see the state of the permanent tooth and any damage to the other teeth. Another case was seen of a young woman who had a suspicious white patch on her right buccal mucosa for the last month, possible diagnosis of lichen planus. However due to lack of facilities the patient required referral to Leh hospital for a biopsy to rule out any critical diagnosis. In both cases due to the lack of facilities immediate treatment could not be given, also there is lack of follow up, so it is dependant on the patient to attend Leh hospital, which may not occur.

5.1.2 Materials and Instruments

The materials and instruments used were noted in the results. There was sufficient variety of forceps, elevators and local anaesthetic cartridges for extractions. There was also a sufficient amount of toothbrushes and toothpaste to give oral hygiene instruction.

There was a lack of restorative materials, as the only material available was glass ionomer. As a restorative material it has a higher failure rate than amalgam and composite, therefore was not considered in larger cavities. It’s setting and working time was found to be very long (approximately 10 minutes and 5 minutes respectively), which may have been due to the material being past the expiration date. Poor moisture control and inadequate packing instruments resulted in the longevity of the restorations being suspect.¹⁰

The instruments such as the excavators and scalers were blunt therefore they were not as effective in removing caries and calculus. In the dental camps there were no drills, water suction and lighting (torches had to be used as lights).

The main deficiency faced was sterilisation, as there was no autoclave or bleach to clean the instruments. Instead boiling the instruments for at least 10 minutes and then used alcohol rub to disinfect the instruments. This is found to kill or inactivate micro-organisms but not usually spores. This is only suitable if no other means of sterilisation is available in dealing with invasive instruments. In the UK, autoclaves are used to sterilise instruments, but in Ladakh the instruments could not be sterilised, therefore disinfection was the only option available.¹¹

5.1.3 Barriers to dental care

The main barriers to dental care were noted through the questionnaire by asking other members of the team and via personal observations. The barriers to dental care can be split into two types, the people from Leh and the people from the remote areas of Ladakh. In Leh, many of the patients seen had greater awareness about dental care and personal hygiene. They faced fewer barriers than those living in the remote areas. In Leh, a number of private dentists are available and any emergency treatment could be carried out in Leh hospital. In the more remote areas, dental care is scarce and any emergency treatment involves many hours of travel.



(The location of the Nomadic areas)

In Leh, the barriers observed for people receiving care seemed to be communication, as most either speaks Hindi, Ladakhi or Tibetan. Also, lack of education on oral hygiene and its importance was noted.

In the remote areas, the barriers faced were lack of education and remoteness of the area. Access to a dentist was a problem. However, in one of the clinic sites called Tangste, a dental clinic was found in a health centre. Even though there was a dental chair, it was not in working order. The dentist did have more restorative materials; however while using the unit, Himalayan Health Exchange was not allowed to use the equipment.



(The dental clinic in Tangste)

The main barriers noted (figure 3) were the remoteness of the area and the lack of health education.

Other barriers faced by the team (figure 3), was communication difficulties and lack of resources. The communication barriers were overcome by the use of translators, however due to the wide variety of medical and dental clinics set up, there usually was of lack interpreters when required. The participants of the trip found the most rewarding aspects of the trip to be location, treatment, working as a team and cultural differences (see graph 2).



(A patient being examined by a medical student with a translator present)

In the UK, the main barriers to dental care are perception of need, access, cost, fear and anxiety and the dentists' themselves. The dentist also faces barriers; these are patient's anxiety and fear, time constraints, stressful environment and overhead costs. Similarities can be noted by the barriers faced in the UK and those faced in a remote area such as Ladakh. Perception of need and access are key in people not obtaining dental care in both areas. Differences were noted in the barriers faced by dentists, as remoteness of Ladakh and the problems with communication were a greater obstacle than time constraints or the patients fear and anxiety, faced by dentists in the UK.¹²

5.1.4 Diet

The diet in these areas was noted. The main sources of sugar resulting in the dental decay were found to be from the powdered milk used in tea and given to young children. The diet in Ladakh consists of large amounts of meat, vegetables and wheat products. Also, the local people drink butter salt tea in the winter as it keeps them warm during the cold.

5.1.5 Oral health

The oral health of people in Ladakh was noted through observations. It was noted that patients had high levels of dental decay. This was explained by the high amount of sugar in the diet, through the high carbohydrates intake, sugar present in dried milk and the sweet tea. Also, a large amount of periodontal disease was noted, being the most common diagnosis when extracting teeth in adults. This can be explained by the poor oral hygiene practices, as patients do not recognise the need of cleaning their teeth. It was found that many people in the remote areas, do not clean their teeth during the winter, as water has to be melted, so is only used for drinking. People clean their teeth in the winter with butter and salt, coal and salt, or nothing at all.⁷

In Ladakh there is high natural fluoridation in the water, which explains the high amount of arrested caries and staining seen on the teeth called fluorosis.

5.1.5 Himalayan Health Exchange

Himalayan Health Exchange aids the people of Ladakh by providing dental care to remote villages where access is limited. They help to provide one-off care to the poor people of Ladakh. They are able to work with the local health authorities to provide health care and create health awareness in restricted areas, for example the Nomadic areas. The programme helps to overcome one of the main barriers to dental care, i.e. the remoteness of the area by providing medical and dental care to the region of Ladakh.



(The Medical camp set up in the Nomadic area)

In order to overcome the barrier of lack of education in oral health care, they assist the people of Ladakh by providing facilities to the dental team so they are able to educate people on brushing their teeth and create awareness about oral health.

6.1 Conclusion

The differences between the UK and such a remote area in Ladakh were both fascinating and interesting to see. The care provide by Himalayan Health exchange is invaluable to the people of Ladakh, especially those from Nomadic areas. Some people had lived with toothache for so long, that when relieved from the pain, they were so surprised and grateful.

There were some problems in providing this type of dental care. One of the main problems was that the visits were one off, so no follow up treatment could be provided, and in saveable teeth extractions were the only choice. Another major problem was the lack of sterilisation, which had increased the risk of cross infection immensely. For further visits, adequate cross infection control is required in order to sterilise instruments.

Treatment options were limited to extractions and oral hygiene, mainly due to lack of resources. The use of drills, water suction, appropriate lighting and restorative materials are required in order to provide adequate care. There were adequate toothbrushes and paste so appropriate oral hygiene instruction could be provided. Also, there were adequate forceps, however further provision is required if an emergency surgical extraction is required.

Barriers faced such a remoteness and communication difficulties, can be overcome by provisions of dental teams by the local health authorities visiting the remote areas from March to September (when the roads are reopened) and providing dental treatment to the people requiring it the most.

As well observing the dental care provided, medical care was observed. The assistance it provided to the Ladakhi people was great, especially the eye clinic. Many of people suffered from visual disturbances due to extreme sunlight and their lack of protection for their eyes. Eye treatment was provided via giving patient glasses for long or short sightedness. Other medical treatment given was providing medicines, gynaecological, and paediatric examinations.

Personal Achievement

Personally, I found this experience extremely valuable and would recommend this trip to future students. It was wonderful to learn about another culture and a way of life. Also, to provide care to people, who had no other means of obtaining care. I especially enjoyed the field trip to the Nomadic areas, as only 6 people were chosen to travel to these areas. The lifestyle of these people was fascinating to observe and the remoteness of the area was remarkable. I feel that I have developed as a person and as a dental student. I would hope to return to the area again with this organisation, if possible in the future.

Acknowledgements

I would like to thank Ravi Singh and Hem Thakur from the Himalayan Health Exchange for allowing me to participate in this expedition. I would also like to thank Mrs K Waldron for books and information on the area I was visiting. Also, Dr K Hill, my adviser for her advice and support; and Dr W Palin for checking over my work when completed.

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All photos in report without any references are personal photos taken by myself.

Questionnaire on treatment carried out in the Chang Thang Expedition

Name:
Age:
Occupation:
Country:

1. Why did you decide to become involved in this particular expedition? (Please circle as appropriate)

Medical/Dental Elective

Interest in area (i.e. location)

To gain further experience

To aid those less fortunate

Other (please state).....

2. Have you attended this trip before?

Yes

No

If so how many times?

3. Have you noticed any differences in dental treatment requirements carried out here compared to the UK? (Please circle as appropriate)

Yes

No

Not sure

If yes, please specify the differences.

4. What were the most rewarding moments of the trip? (Please circle as appropriate)

Local people

Location

Treatment

Working as a team

Cultural Differences

Other (please state)

5. What were the most challenging moments of the trip? (Please circle as appropriate)

Lack of resources (i.e. equipment for treatment)

Communication difficulties

Cultural differences

Remoteness of area

Lack of facilities

Other (please state)

6. From your own experience, what are the barriers in achieving dental care in these remote areas? (Please circle as appropriate)

Financial

Communication

Remoteness of area

Transport

Dietary

Lack of health education

Other (please state)

7. From your own experience what are the attitudes to dental care in these areas?

8. Would you attend this kind of trip again?

Yes

No

Not sure

Please specify the differences.

9. Are there any other comments you would like to make?

Thank you for answering this questionnaire.

The following results are for question 1, 2, 3 and 8 from the questionnaire.

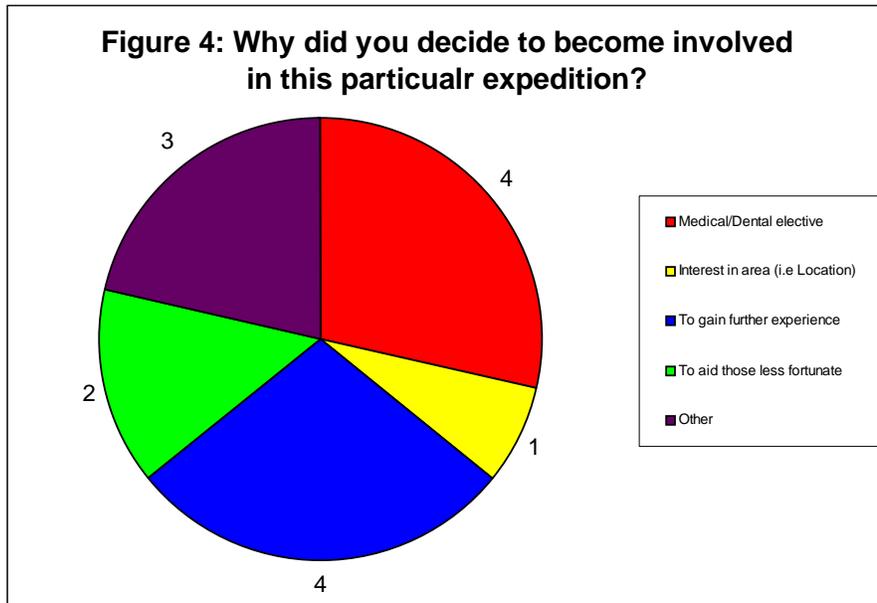


Figure 4 shows that the most participants of the trip were carrying out their medical or dental elective and to gain further experience in their chosen area; both receiving 28.6% (3 significant figures) of the responses.

Other responses from the questionnaire noted that most people had not attended this type of expedition previously with only 2 out of 10 participants attending prior to this expedition. It was also found that all ten participants questioned would attend this kind of expedition again.

When asked about differences found in the UK and Ladakh 90% participants said that a difference was seen, with only 1 person not sure whether there was a difference.