

Clean Water Project 2016

3rd Report on Lha's Clean Water Project

Introduction

Dharamsala is a small village situated in Himachal Pradesh, Northern India. Located here is the seat of the Tibetan Government in Exile, the home of His Holiness the 14th Dalai Lama, and the office of Lha Charitable Trust, a grassroots, non-profit organisation run by Tibetan refugees. In addition to playing a crucial role in the community by providing free education to Tibetan refugees, Lha has a number of projects such as their Clean Water Project. Since 2010, Lha has installed water filtration systems at 24 different sites throughout Northern India. This has contributed positively to the health and wellbeing of Tibetan, Indian and Himalayan communities. The total number of beneficiaries of the Clean Water Project to date is approximately 13,753 people.

There are a number reasons why clean drinking water should be a priority in the Tibetan refugee communities throughout India.

Firstly, these communities suffer the double burden of polluted drinking water and water shortages. During monsoon season (June to September) the influx of water overburdens water storage systems, ground water pipes and septic systems.

Lack of reliable infrastructure in these water systems both leads them to be prone to breakage and to be expensive to maintain or repair. As water shortages are an issue, ensuring the proper utilization and storage of available clean drinking water is key in preventing disease and supporting quality of life.

Secondly, there are often extreme negative health effects caused by the unclean and polluted drinking water. Especially during the monsoon season, there is an increased risk of waterborne diseases such as typhoid, cholera and other digestive system illnesses, of which some can be fatal. Those at greatest risk are young children, the elderly and individuals with existing health conditions. The impact of disease is not limited to the physical symptoms, but also has social and financial implications. For example, it prevents children from attending school and adults from going to work.

Ensuring that children attend school and receive a higher level of education is an important factor in improving their chances for a better future. Similarly, adults have a greater chance of financial stability and job security if illness does not disrupt them from going to work. Contracting waterborne diseases adds to the already existing challenges faced by the refugee communities and impedes in the economic and educational independence on which these communities rely.

Thirdly, health and hygiene awareness is of equal importance as proper sanitation infrastructure. Good personal hygiene helps to prevent the contraction of infectious diseases; through proper handwashing, refraining from spitting or sharing cups and utensils. It has been seen that following the installation of the water filtration systems, the community members also become more aware of the importance of personal hygiene and an improvement in this is seen within these communities.

In order to support Tibetan refugee communities and continue the positive impact of the Clean Water Project, Lha intends to install further water filtration systems and ensure proper maintenance of the current and future water filtration systems.

Previous Reports

In 2013 the first Clean Water Project survey report investigated the level of awareness of drinking water safety and the water filtration systems installed by Lha. At this time, the positive effects were clear; there was a clear drop in waterborne diseases, an improvement of the student's health and higher attendance to class. The most important benefits of the water filtration systems was better health, the accessibility of safe drinking water, and financial savings on energy and gas through no longer boiling tap water. There was a high level of appreciation by students and teachers, but maintenance and awareness on health and hygiene were identified as areas of improvement.

In 2014 the water filtration systems were tested for coliforms, E.coli, pH and TDS (total dissolved solids) at 33 different sites in Himachal Pradesh, Uttarakhand and Delhi. These quality indicators assessed the functioning of the water filtration systems and determined the water quality. Overall there was a high percentage of coliform and E.coli, present even in the samples taken from the water filtration systems. Contamination of water storage tanks was cited as a possible reason for these results and therefore cleaning of the storage tanks is crucial.

In the Fall of 2014, a second survey report was conducted where students, teachers, college students and staff were asked about their usage of water, acceptance of water filtration systems, impact on health, usage and maintenance problems, and hygiene awareness. From the results of the report, it was noted there was a high agreement that water filtration systems have a positive impact; student's attendance to classes improved and hygiene awareness had risen.

Clean Water Project 2015/16

Throughout the course of the project, Lha has installed 24 water filtration systems at a number of sites that have the potential to impact the highest number of people. These sites include schools, a hospital, an elderly person's home, a library, a nunnery and other high-traffic areas. Reverse osmosis and ultraviolet water filtration systems have been installed along with a five hundred litre storage tanks that provide an emergency and reserve water supply during such events as a power outage or water shortage.

Achievements in 2015/16

- Lha installed **eight water filtration systems** in community areas throughout Himachal Pradesh and Uttarakhand.
- Direct **communication** with the managers of the filter company **Renuka** to strengthen the collaboration and to ensure proper maintenance by the company's service team.
- Health and Hygiene awareness discussions held with school students and teachers in conjunction with the data collection for the third survey.

Third Survey Report 2016

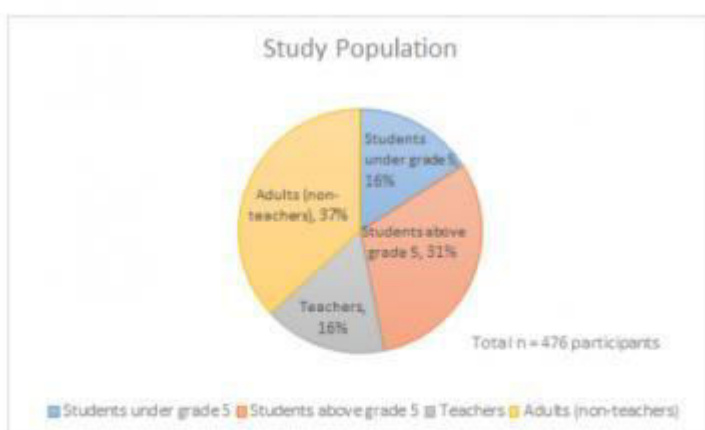


Figure 1: Study Population

A follow up study to the 2014 survey was carried out in March and April of 2016 where users of the water filtration systems answered a written questionnaire. There were 476 respondents of whom 78% were Tibetan and 20% were Indian, the remaining were Nepalese or other

nationalities. The study consisted of four survey types; students under grade five, students, teachers and general adults; and was carried out at 15 sites in Himachal Pradesh and the neighbouring state, Uttarakhand.

Filter Impact

- 60% of teachers reported an increase in their student's' class attendance after the installation of the water filtration systems.
- 79% of students reported an improvement in their overall health after drinking filtered water.
- The majority of respondents were very appreciative of Lha installing the water filtration system, however they cited maintenance as a key issue in ensuring the ongoing health benefits to the communities in which the systems are installed.

Water Usage

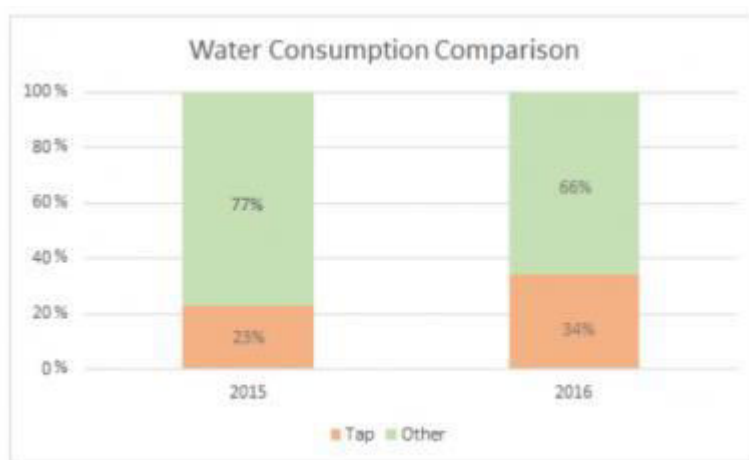


Figure 2: Water Consumption Comparison, 2015 and 2016

In 2015, 23% of respondents reported consuming tap water, in 2016 this figure rose to 34% (Figure 2). Of those respondents who reported that they still consume tap water, only 1.2% (n=3) reported boiling the tap water before drinking it. Issues with access to the water filters were reported by 29.3% (n=48) of respondents. 15.9% (n=26) reported that there was a problem with a broken filter or an unclean water tank. 13.4%

(n=22) reported drinking tap water because of a non-maintenance related issue, such as the water filter being too far from their hostel or classroom, or only having one water filter available to a large number of people. 70.3% (n=116) either did not give a reason for still drinking tap water, or they reported other reasons (e.g. personal preference, that it is easy to access, that it is free, for general drinking purposes, that it is good for health and hygiene, that it is good during non-monsoon season).



Figure 3: Filtered Water Access

43% of students reported that it was easy to get filtered water at their school, with 47% citing it was sometimes or often difficult, and 10% reported it as impossible (Figure 3). Some institutions allow the users of the water filtration system to take filtered water with them for home use. However, of the 47% of overall respondents who did not take filtered water home with them, only 9.4% had a filter at home, 6.3% drank boiled

water and 0.45% drank bottled water.

Health Situation

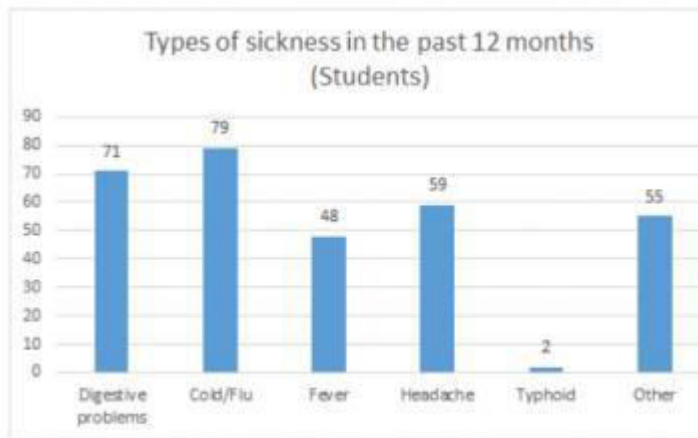


Figure 4: Types of Sickness (Students)

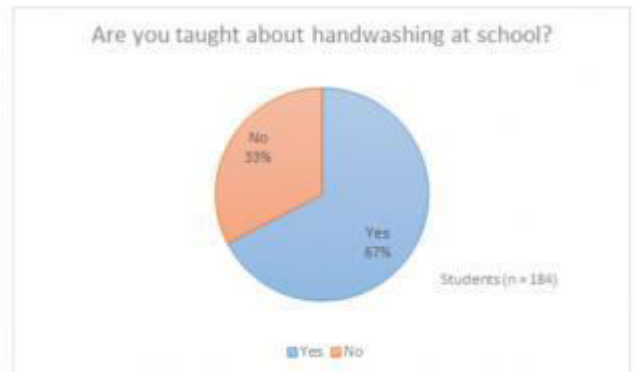


Figure 6: Students Awareness of Handwashing Teaching

Refugee communities, such as those of the Tibetans, are often prone to infectious diseases. Especially young children are at risk, as their immune systems are not as well developed or strong as that of adults. This is also reflected in the current study, as 57% of the respondents who reported being sick more than five times in the past 12 months were students. Therefore it is necessary that there be continuous focus on improving water safety, accessibility and availability for children in particular.

Digestive problems are one of the more common and dangerous diseases from which children can suffer, as they put tremendous pressure on children’s overall health. As seen in Figure 4, digestive problems were quite common for students in the past 12 months.

These digestive problems could be due to factors other than waterborne diseases, such as a lack of personal hygiene, which is why health awareness and education is important from an early age. Symptoms such as fever and headache could also be connected with digestive problems, for example fever could be a symptom of digestive tract infection, and headache could be a result of dehydration due to digestive issues such as diarrhoea. Therefore, it is likely that these illnesses are as a result of unclean drinking water and poor sanitation.

Digestive problems were the second most common sickness with 21% of that respondents reporting that they had suffered from it in the past 12 months. In addition, the symptoms of fever (15%) and headache (19%) were could be partially attributed to digestive problems (Figure 5).

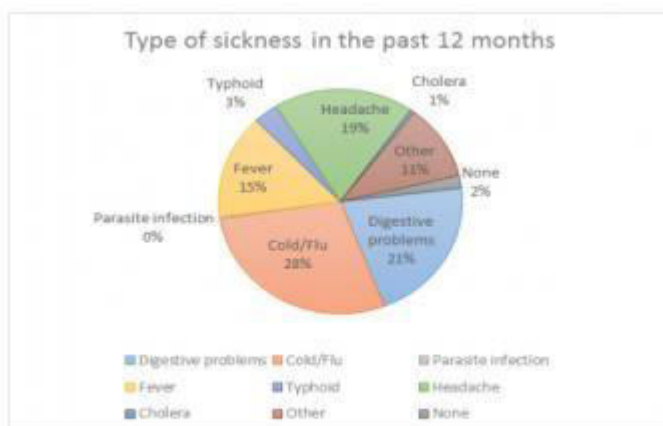


Figure 5: Types of Sickness (Overall)

Health and Hygiene Awareness

Health and hygiene awareness is an important factor when ensuring good health for people. Teachers have an important role here as the communicator on sanitation to students. However, according to the research conducted at the schools where the water filtration systems have been

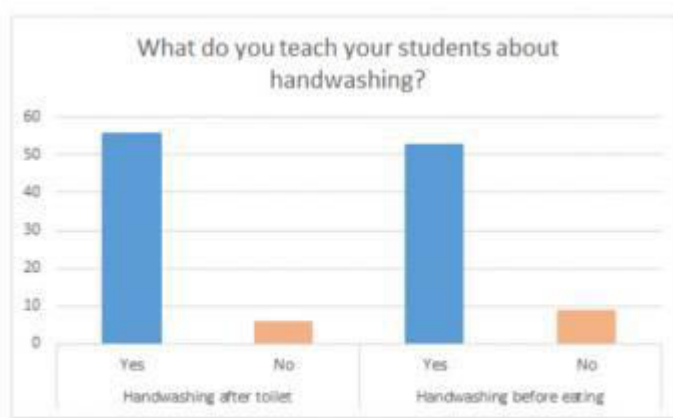


Figure 7: Teachers Awareness of Handwashing Teaching

installed, there are inconsistencies between what the students report compared with what the teachers report. 33% of all students claim they are not taught about handwashing at school (Figure 7), whereas most teachers have reported to be teaching about hand washing after

visiting the toilet and before eating (Figure 8). This could be due to the method of education regarding hand washing not being suitable to the students, or it could be an information bias as the students and teachers have both self-reported the information.

Most Exposed Demographics

Some demographics are more exposed to the risks related to unclean drinking water. As mentioned earlier, children are of greater risk than adults, but also individuals suffering from other diseases and the elderly are at risk. Refugee communities tend to have higher rates of disease as they not only lack accessibility to safe drinking water, but also lack other basic commodities and opportunities such as safe shelter and adequate amounts of nutritious foods. Therefore, ensuring a safe source of filtered water may help to improve the overall health status of the Tibetan refugee communities.

Challenges to Water Filtration System Access

In addition to the lack of accessibility of clean water due to broken water filters, unclean storage tanks, location, or the quantity of water being too low for the number of users, there seems to be a broad spread challenge in maintenance of the water filtration systems. As noted in earlier reports on the Clean Water Project, proper maintenance is key to the long term functionality of the water filtration systems, ensuring continuous availability of clean, filtered water. When funds are available, Lha aims to install new water filtration systems and carry out maintenance of current water filtration systems.

Lha is directly communicating with the company Renuka and the person responsible for the water filtration system at the different installation sites. The decision to cover part of the replacement costs is an important step for the proper maintenance of the systems. The costs sum up to 8,800 Rs. (US\$147) per site, per year and cover the regular replacement of three filter candles (Micronic Spun + Carbon) and the service fee. Nevertheless, in the long-run it is Lha's aim that sites find a solution to bear the maintenance expenses themselves by involving parents, partners and sponsors.

Currently, however, it appears to be challenging for some of the institutions to afford maintenance and repair costs themselves. This is especially seen at some of the sites in the smaller settlements in Uttarakhand. The need for continued funding for the maintenance of water filtration systems, such as cleaning of tanks and installing new filters, is simply a higher price than what the institutions are able to invest independently.

Conclusion

Overall the water filtration systems provided by Lha have been of great benefit to the recipients. Health status and awareness has increased, student's attendance in class is higher and there is an overall positive attitude towards the water filtration systems. Securing a constant supply of clean, filtered drinking water through both the installation of new water filtration systems and the maintenance of existing systems is key to ensuring the ongoing health benefits to the recipients.

Lha has identified the most vulnerable segments of the Tibetan refugee population as sites for current and future installations. The water filtration systems used are reverse osmosis and ultraviolet systems. These systems also includes a five hundred litre storage tank which provides an emergency/reserve water supply in the event of a power outage, water shortage or other problems.

The focus needs to be not only on installing water filtration systems, but on developing a stable method for the proper maintenance of the systems. The individuals in these communities rely on well-functioning water filtration systems to stabilize their level of personal and community health. The positive impacts of the Clean Water Project can be seen on a variety of societal levels. The water filtration systems serve as a springboard for health and hygiene education which is an important part of disease prevention within at-risk communities.

This increase in education and access to clean drinking water in turn decreases the number of missed school and work days, which impacts on a household and community level. This has a flow on effect of reducing medical care costs, which reduces financial burden on both a governmental and a household level. Healthier citizens lead to healthier communities, in which education plays an important part in development. Education helps to create independent citizens who can contribute positively and continuously to the society in which they live. By investing in the Clean Water Project, we are investing in a better future for society as a whole.

Lha is seeking monetary support in order to maintain current and install new water filtration at critical sites throughout India. This includes schools, monasteries and other institutions that play a key role in community development within Tibetan settlements.



This survey was conducted and summarised by Lha's former volunteers Ms Ashley Summers from Australia and Ms Tine Niklasson from Demark, who are professional on Global Nutrition and Health, Specialising in Public Health Nutrition and Food Policy.