

SODIS - WATER QUALITY IMPROVEMENT AT HOUSEHOLD LEVEL

A CASE EXAMPLE FROM ECUADOR

SUMMARY

In Ecuador, the Ministry of Health (Office of the Pinchicha Province), implemented a two-year Project in the peri-urban area of La Concordia with the technical assistance of the SODIS Foundation. This area was chosen because it lacks basic sanitary services and the population has very high levels of diarrhoea. 600 families of the area were trained in the correct application of SODIS as well as other simple practices which decrease diarrhoea rates. After the implementation of the project, 420 families - 70% of the population trained during project implementation - regularly use SODIS as their preferred method to treat drinking water. A central factor for the success of the project implemented was the high level of commitment of the staff of the Ministry of Health at all levels. Doctors, nurses, assistants as well as local leaders and teachers were the key actors of during the project.



THE CONTEXT

Project location

The project is located some 180 km to the North-West of Quito, Ecuador's capital. The average altitude is 450 meters above sea level, the climate is moist, and the temperature lies between 23 and 30 °C. Around 20'000 people live in the project area, a peri-urban neighborhood of Santo Domingo de Los Colorados.

Water supply

People in the region in general do not have access to improved water supply. 20% of the population in the central part of the project area are connected to a water supply distribution network. The water supplied through the network is sourced from a deep well. The remaining population uses shallow hand dug wells. Most of the houses have their own well, the depth of these wells in average is 12 m. Only 30% of the people boil the water used for drinking.

During a baseline survey people indicated that they were interested and motivated in improving the quality of their drinking water. This was an important factor for the selection of the area during project implementation.

Health situation

There are two public health centres in the region, six private health centres, birth houses and traditional healers. The prevalence of diseases caused by waterborne pathogens is very high and among the top causes for the high mortality rates.

Social aspects

90% of the inhabitants of the region belong to the racial

group of the "Mestizos", 10 % are black. The main source of income and activity is agriculture. Many people work on their farms. Their average income is around 100 dollars per month. The houses are made of wood and brick, the roofs are mostly zinc sheets and the floors earthen. There are 15 schools in the project area. On average, the families have 5 members.



Fig. 1: 70% of the population trained use SODIS for the treatment of their drinking water

THE PROJECT

Objectives

The objectives of the project were to reduce the number of cases of diseases caused by the consumption of unsafe water by using a water treatment method at household level, such as for example SODIS; and to raise the awareness on the importance of good hygiene practises and their positive health impact.

Strategies

- Health personnel was trained in the SODIS method.
- Responsible persons for the project implementation in each neighbourhood were identified as promoters.
- Local leaders and the teachers of the schools in each neighbourhood were involved.
- Students and pupils were used as multiplication actors for spreading good hygiene practices and healthy habits.
- The recycling of used plastic bottles was promoted.
- Water samples from the sources (dug wells and taps) and from the SODIS bottles were analysed for bacteriological contamination.
- Household visits were carried out by the voluntary leaders.
- Didactic material was evaluated in the zone prior to its production.

Actors

The principal actors of this project were the staff of the health posts of La Concordia, local leaders, teachers, and families of the area, the Ministry of Public Health at Province level, and the SODIS Foundation.

Duration

The project duration was two years. During the first year, all the households were visited on a monthly basis. During the second year, every three month a monitoring process was carried out.

Financial issues

The total costs of the project were USD 12,072. Of these costs, USD 7,395 were covered by the Health Ministry (DPSPD), and USD 4677 by the SODIS Foundation. This results in per capita costs of USD 4 for the project implementation, mostly used for training, promotion and follow-up activities.



Fig. 2: People in La Concordia were interested in improving their drinking water by using SODIS.



Fig. 3: Promoters and nurses explain hygiene and SODIS during household visits



Fig. 4: Health center in La Concordia

ACHIEVEMENTS AND FACTORS OF SUCCESS

Participation at the household level

At the end of the project, 70% of the trained families regularly are using SODIS for the treatment of their drinking water. It is typical for the coastal area of Ecuador that people got closely involved with the project activities. There was great enthusiasm and acceptance of the new method by the users, the level of participation during the training sessions as well as during special events of the project was very high.

Institutional cooperation

It is worth pointing out the high level of commitment of the staff of the Ministry of Health at all levels. Doctors, nurses, assistants and statisticians were involved and cooperated to a high degree. Also the teachers of the local schools participated actively in the project, thus further multiplying the effects of the project.

Water quality and health impact

Water samples were analysed by the health staff before and after exposing the bottles to the sun. The results were presented during community meetings. They clearly demonstrated the effectiveness of SODIS and greatly improved the credibility of the method. Thanks to the involvement of the health posts, a significant reduction in child diarrhoea rates could be achieved.

Behaviour change

The families in the project regions have learned that drinking unsafe water and not washing hands before eating and after going to the toilet are risky behaviours. They are aware that they have to boil the water or use SODIS before they drink it.

Factors of success

- SODIS is a very simple and cheap method for water disinfection at the household level.
- The water analysis demonstrated the poor quality of the raw water that was consumed before project implementation.
- The strong support of the local leaders and volunteers in the project neighbourhoods.
- The involvement of the health personnel at all levels and involvement of the teachers.
- Support of the local print media.



Fig. 5: Solar Exposure of PET-bottles

THE CHALLENGES

Limitations

- Slow financial and administrative processes.
- Frequent changes of the authorities.
- Unforeseen situations such as strikes.
- Lack of adequate vehicles.
- Lack of permanent personnel in the operative units.
- Initial low credibility of the SODIS method.
- Interruption of the activities in schools during vacations.
- The work of the local leaders often was discontinued.

Potential for up-scaling

In Ecuador, more than 3 million people do not have access to safe water. They live mostly in the rural area and in peri-urban regions of the cities. Constructing water supply networks for these people requires investments of millions of dollars for infrastructure, which are not available in the short term. Until the needed infrastructure is available, SODIS can be used at household level to improve the quality of the water consumed.

As the Ministry of Health in Ecuador is responsible for water quality surveillance, they are planning to replicate the experience made in La Concordia in other regions of the country, in the peri-urban as well as in the rural area, giving priority to the most vulnerable zones with low water quality and difficult health situation of the local population.

The simplicity and the low costs of the method increase the probability of SODIS to be accepted and used by the population. Therefore, promotion and diffusion at a larger scale is foreseen for the near future. A first step in this direction was the signature of an agreement between the Ministry of Health and the SODIS Foundation, in which the two parties define their roles in the diffusion process on a nationwide scale.

Lessons learnt

- Visits at the household level and water analysis at the group level are activities of highest importance; they were indispensable for the present SODIS project.
- The dedicated and enthusiastic work of the implementing agency is needed for the sustainability of the intervention.
- It is important to introduce new methods and technologies at the group level in order to obtain the approval at this level.
- Motivated teachers are a great help in the

implementation of SODIS projects.

- The use of mass media is a good way to diffuse the knowledge of SODIS.
- It is a good practice to integrate SODIS into health and hygiene education project instead of only addressing the issue of water disinfection.



Fig. 6: Children filling bottles for SODIS

REFERENCES & PARTNERS

The Ministry of Public Health is an entity of the Government of Ecuador. Amongst its main activities is the protection of health of people, through preventive, promotional, and curative activities.

<http://www.msp.gov.ec/>

The SODIS Foundation is a non-profit organisation working on the diffusion of low-cost methods to improve health of people in Latin America.

www.fundacionsodis.org