Preliminary results about the Health Impact of a Water and Sanitation Program in Tangier (Morocco)

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Introduction:

Water and sanitation is one of the primary drivers of public health. Health status closely relates to the quality of drinking water (water-borne diseases), and to the efficacy of wastewater treatment. 1, 2 A very large water program was designed for the 2004-2009 period to improve water supply and sanitation coverage in the urban coastal district of Tangier (370,000 inhabitants).

At the same time, a longitudinal study was undertaken to assess the health benefit of this program and is ongoing (first study results are expected for 2019).

Results:

Available data were collected before and during the implementation of the water supply and waste water system.

Water supply and waste water system progress in the city

If a number of donations equipped with water increased steadily over the period, today only 14.2% of Tangier sewage disposal is still collected due to some delay in the opening of the major city sewage plant and of a drainage channel.

Investigation in the two pilot districts

Water-supply was a major difficulty for the families living in the two pilot districts two years ago. In M’Robat, opening of a temporary fountain partly improved the situation in the following months. Most households were fully equipped with tank water supply in early 2007.

Epidemiologic follow-up of water-borne diseases in the whole city

From September 2004 to June 2007, about 11,193 cases of diarrhoea in children (0.3% severe), 2,112 cases of conjunctivitis and 2,914 cases of skin infection (bacterial or fungal infection) were treated in the public health care facilities of Tangier.

Methods:

Health impact of the water and sanitation program is assessed through a pre-post methodology. An epidemiological register was implemented in 15 health facilities in order to follow the incidence of these potentially water-related diseases: diarrhoea in children under 5 years, conjunctivitis and skin infections in the overall population.

Simultaneously, three yearly surveys were conducted in two pilot districts (Shar El Mers, M’Robat) which had no water supply other than well-fattened non-sewage water systems, at the beginning of the study. Every 6 months, 10 households (400 people) were questioned to qualify water use, hygiene practices, water preservation methods, exposure to sea bathing. Samples of drinking water were also twice a year collected for microbiological analyses.

Table 1: Population characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>Shar El Mers</th>
<th>M’Robat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population size</td>
<td>11,150</td>
<td>12,123</td>
</tr>
<tr>
<td>Sex (%)</td>
<td>9.5%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Age (%)</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Access to the beaches</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>N of households with drinking water</td>
<td>6%</td>
<td>6%</td>
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</tbody>
</table>

Following figures present the overall incidence of the selected water-related diseases in the Tangier’s area over the time.

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Figure 1: Progress in water supply (N individual water meters)

Figure 2: Incidence of diarrhoea in children under 5

A clear decrease was observed in the two pilot districts in the percentage of contaminated drinking water samples.

Figure 3: Incidence of conjunctivitis in the overall population:

Clear improvements in the water-supply in the two pilot districts water were not, until now, associated with a clear decrease of the incidence of diarrhoea, conjunctivitis and skin infections.

This situation may be related to the fact that sanitation systems are not fully operational in the two districts until now.

Further investigations will be conducted to document changes in hygiene and bathing habits of the population.

References: