The profile of water-related diseases in Sri Lanka is encouraging, but there is still room for improvement; achieving the goal of "water for all by the year 2000" should have the desired impact on these diseases.

The health status in Sri Lanka, as measured by the usual parameters, has improved considerably during the past few years. Some of the latest available figures, which illustrate this progress, are an infant mortality rate of 17.5 per 1000 (1989), a maternal mortality rate of 0.4 per 1000 (1987), and life expectancy of 67.8 years for males and 71.7 for females (1981). One of the factors responsible for this improvement is the provision of a safe water supply to a large segment of the population.

Sri Lanka depends heavily on rainfall for both agriculture and power. Water is specially precious in the dry zone, which covers nearly half the country and receives rains for only three months of the year during the north-east monsoon. On the other hand, the wet zone is generously provided with water twice a year from two separate monsoons.

The ancient kings of Sri Lanka left behind the legacy of a sophisticated hydraulic system which is still operational today. They created reservoirs or tanks in the dry zone, where water was impounded by building dams across rivers. Constructed primarily for irrigation of rice fields, the system channelled water serially from a large tank into a smaller one and then into a yet smaller one, till the smallest unit of a village tank was reached.

Some of the remote villages scattered over the dry zone still use their own little tank as the community water supply. This was invariably fouled by people who bathed and washed in it, and by cattle which drank from it and wallowed in it. The health of the little village community to a large extent depended on the quality of its water. It was to blame not only for the spread of water-borne diseases but also for other conditions such as parangi or yaws, an infectious disease similar to syphilis but of non-venereal origin, which used to ravage small hamlets, especially in the dry zone. The complete eradication of this scourge since the advent of penicillin was a major triumph of the health service, for together with malaria it impeded economic development of the affected areas.
Success of the decade

The United Nations' International Drinking Water Supply and Sanitation Decade (1981-1990) acted as a catalyst in promoting measures to improve the supply of safe water and drainage in Sri Lanka, where 80% of the population live in the rural sector. In 1981, at the beginning of the Decade, only 54% of the then population of 14.6 million had a formal water supply. Half the urban population had piped water, while 56% of the rural sector was provided with either piped water, protected wells or deep wells equipped with hand-pumps.

The achievements at the end of the Decade are impressive. By 1990, 66% of the total population of 17.6 million, comprising 76% of the urban sector and 64% of the rural sector, had access to relatively safe water, and this represents the extension of facilities to 4.6 million more people. Sri Lanka has now set itself the ambitious task of providing 100% coverage of the population with safe water by the year 2000.

The strategy of providing safe water to towns is in theory simple, the answer being piped water as in any other country. But as the cost is enormous, the scheme will have to be spread over several years. On the other hand, the large mass of rural folk living in scattered communities and under different climatic conditions poses a different challenge. It requires a multi-pronged approach which, according to circumstance, should consist of piped water to small townships, deep wells mostly in the dry zone, and protected shallow wells elsewhere.

Tube wells, drilled to a depth of 75 to 100 metres and equipped with a hand pump, provide safe water of good quality and taste. This programme has now set up 12,000 units, each costing about US$ 1500. Tapping the deep subterranean sources, they have been of immense benefit to the people. A pleasing spectacle that confronts the traveller is that of a group of women gathered round a tube well in the midst of a parched land, each waiting patiently for her turn to fill her earthenware pot.

Deep wells now serve a population of 1.2 million, and it is proposed to increase the coverage to another one million by the year 2000. When the last census was taken in 1981, deep wells were not a significant source of water. But the main thrust of the rural programme is on building conventional shallow wells, a source of supply even in ancient times. The remains of an eleventh-century well have been discovered in an ancient human habitation. It was lined with cylinders made of baked clay and placed one above the other in layers.

Water from a shallow well is considered safe if it is protected by an adequate perimeter wall, has a drainage apron on a well-compacted base, and is fitted with a fixed rope and bucket to discourage the use of individual vessels. In 1990, protected wells served a population of 0.5 million.

Unsafe water

In 1990, five million people obtained water from unsatisfactory sources, such as unprotected open wells, tanks, rivers and springs. Natural springs are crystal clear in the upper reaches, but after exposure to human settlements downstream they lose their sparkle. In some instances the water is led to where it is needed via an aqueduct improvised with longitudinally split trunks of palm trees, offering the picturesque sight of people bathing under a cascade of water at the end of the aqueduct.

Regular advice is given to the public through the media on the importance of boiling water before drinking. In a country whose literacy rate in 1981 was 87.2%, people are generally receptive to this advice, but one constraint is the high cost of fuel.

The dedication of the Decade to both drinking-water and sanitation underlines the complementary roles that each plays in the health of the people. In the 1981 census, 70% of the occupied housing units or 48% of the population had access to some formal means of excreta disposal. The estimated figure at the end of the Decade was 58% of the population.

Historically, cholera was the most important water-borne disease in Sri Lanka. In the late 19th century,
frequent epidemics took a heavy toll. But the disease was never endemic in the country, and was not permitted to take root. It was especially common along the old migrant labour routes, where it spread through contaminated water in tanks and wells. There was a dramatic fall in incidence in Kandy and Colombo after a piped water supply was introduced in those towns in 1878 and 1894 respectively. In recent times there have been only sporadic cases.

**An attack on all fronts**

As in many other less industrialized tropical countries, there is a high incidence of diseases resulting from poor environmental conditions. While the quality of water is an important determinant, other issues such as sanitation, immunization and primary health care also must be addressed if a dent is to be made in their incidence or in the mortality they cause. In Sri Lanka, an attack on all fronts has produced a favourable outcome.

The incidence of diarrhoeal diseases varies throughout the year but still remains unacceptably high at 802 cases per 100 000 population. On the other hand, only 0.4% of them died in 1991, a dramatic reduction from 1.3% in 1981. Poliomyelitis has been virtually eradicated, mainly through immunization; there were only four cases in the whole country in 1991. As for typhoid and paratyphoid, there was a time in the 1950s when entire sections of hospital wards were reserved for them. Now the picture has changed drastically, and the incidence was only 25 cases per 100 000 population in 1991.

The profile of water-related diseases is encouraging, but obviously there is much room for improvement. It is hoped that the achievement of the goal of “water for all by the year 2000” will have the desired impact on these diseases.

---

Dr Christopher Gunapala Uragoda is a consultant chest physician at the Chest Hospital, Welisera, Ragama, Sri Lanka; he is also co-editor of the Ceylon Medical Journal.

**A gift of nature: pure fresh water.**