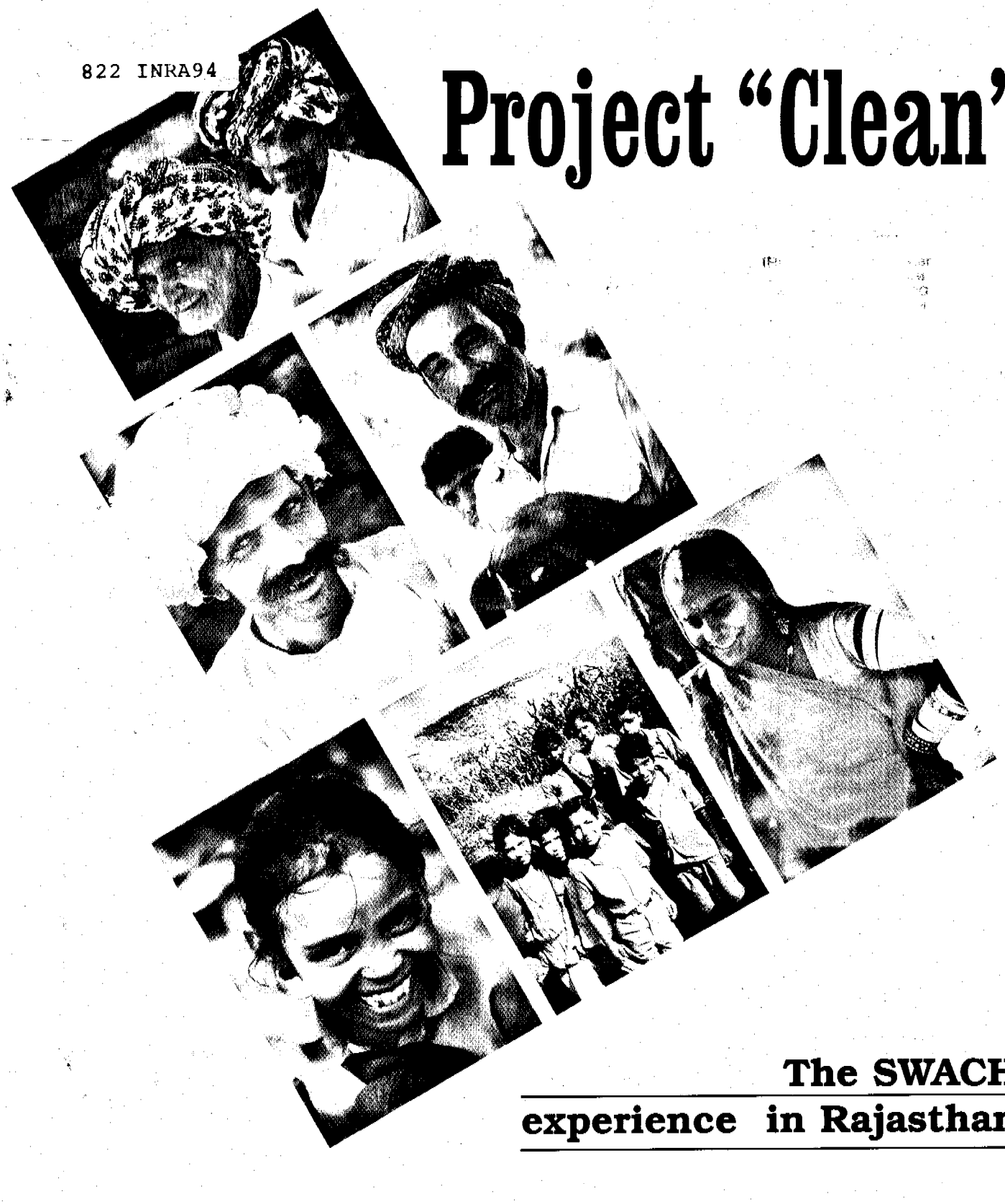
Project "Clean"



The SWACH experience in Rajasthan

United Nations Children's Fund,
India Country Office

with financial assistance from the
Swedish International Development Agency (SIDA)

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The district of Rajsamand was created out of the northern part of the erstwhile district of Udaipur in April 1991. Information preceding this date refers to both districts under the name of Udaipur.

Project "Clean"
The SWACH Experience in Rajasthan
UNICEF Rajasthan

Compilation, design and layout :
Shampa Banerjee

Editing and technical advice :
Eleanora de Guzman
Berto Bauza

While ascribing everything good in this book to our several colleagues, any errors and omissions are entirely attributed to the authors. The views expressed do not necessarily reflect the official policies of UNICEF.

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SWACH Project stands for the commitment and contributions made by all staff. Only because of their permanent enthusiasm and continued support, the objectives of the Project were achieved.

The driving force behind SWACH was the leadership, able administration and enthusiasm of several IAS (Indian Administrative Service) officers – Mr. Parvender Singh Panwar (1986-1988), Mr. Indu Bhushan (1988-1989), Mr. Mukesh Sharma (1989-1991), Mr. T. S. Sandhu (1991-1992), Mr. J. C. Mohanty (1992-1994), Mrs. Shubhra Singh (1994-November, 1995) and Mr. S. K. Hawa (November, 1995 till date).

They were assisted by a devoted team consisting of Mr. Anil Bhandari, Ms. Vimal Chordia, Mr. N. S. Singhvi and Ms. Alka Shrimali, who officiated as Assistant Directors.

The contributions made by the following officers in implementation of the project is praiseworthy.

Udaipur	**Dungarpur**	**Banswara**
Mr. Vikram Singh	Mr. S. L. Bohra	Mr. K. L. Bhandari
Mr. C. P. Kumbhat	Mr. S. L. Devpura	Mr. S. N. Dave
Mr. R. Singh	Mr. S. C. Audichya	
Mr. M. M. Taunk		
Mr. Dalbeer Singh		
Mr. P. R. Jain		

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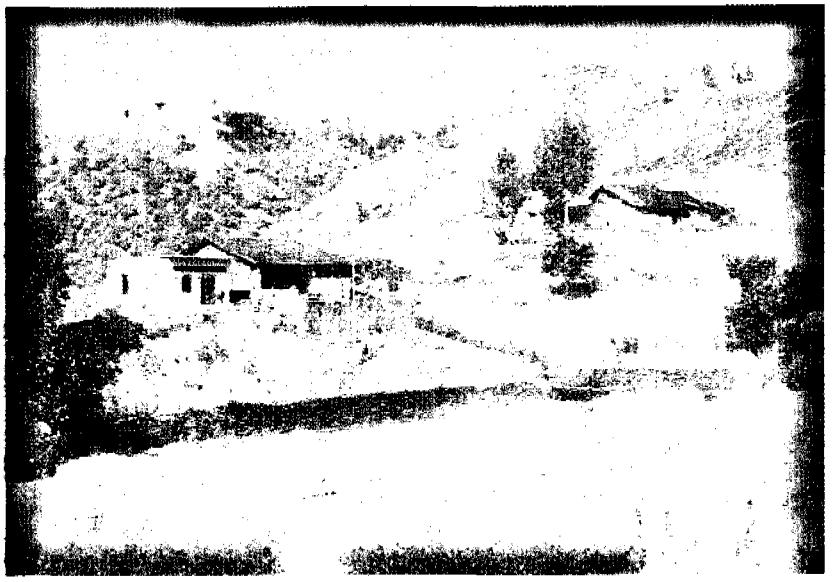
Finally, we would fail in our duty if we do not acknowledge the devotion and dedication of SWACH Scouts and Animators who are villagers themselves. All credit goes to them for their constant vigilance which will eventually help to eradicate one of the most dreaded diseases from the face of this country very shortly.

UNICEF, Rajasthan Field Office
Jaipur

1

Project "Clean" - The Setting

The Integrated Sanitation, Water, and Community Health Project is best known in the south of Rajasthan by its acronym, SWACH. It is easy to remember, especially since it sounds exactly like a word in Hindi which appropriately means "clean". A joint programme of the government of Rajasthan and Unicef, with financial assistance from the Swedish International Development Authority (SIDA), and the Government of India SWACH was started in the southern districts of Dungarpur and Banswara in 1986. Two years later, the project was extended to include Udaipur and Rajsamand.



The Land

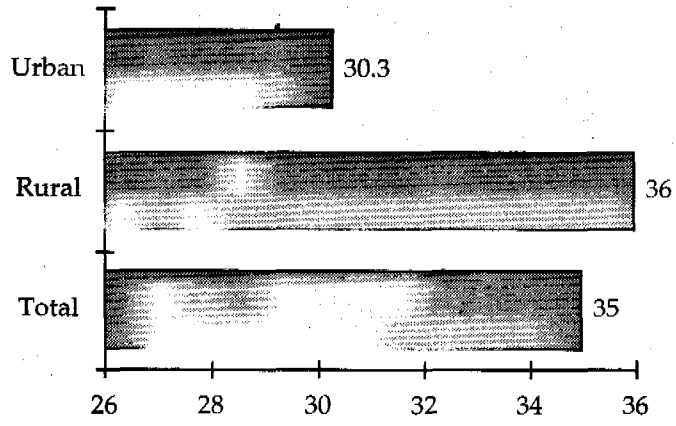
SWACH is a result of long-standing cooperation between the Government of India and Unicef in the field of water supply and environmental sanitation. An integrated, area-specific project, it has been a trial ground for new concepts and methods for the delivery of services with the active involvement of the community. Inter-sectoral cooperation within the government is an essential element in the project and convergence with other Unicef supported programmes, such as Development of Women & Children in Rural Areas (DWCRA), Women's Development Programme (WDP) and Integrated Child Development Services (ICDS), has contributed significantly to its success.

Growing concern about the ravages of water borne diseases in developing countries, especially among children, was one of the critical factors that led to the UN declaration of 1980–1990 as the International Drinking Water Supply and Sanitation Decade. At the same time, SIDA's own involvement with water resources development programmes reflected that organization's belief in the importance of safe water in the effort to improve community health, enhance productivity and growth and accelerate the process of change. Rajasthan seemed highly eligible for SIDA's support in this area of activity.

Rajasthan, with its desert lands and swiftly reducing forest cover, has faced drought conditions repeatedly in the recent past. Between the sandy soil and the rocky hillsides, the state simmers in the long drawn out summers, when the meagre water and vegetation have to be shared by both man and beast. This is also a state where distance effectively isolates habitations and the rough terrain makes it doubly difficult to deliver basic services to the people.

With a total population of 44, 005,990 and a decadal growth rate (28.07%) higher than the national average (23.50%), Rajasthan's per capita income at

Rajasthan: Crude Birth Rate, 1992

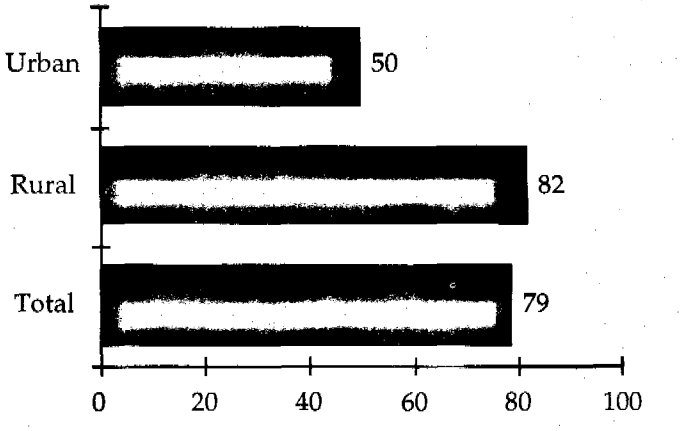


Source: Sample Registration Scheme, Government of India

current prices has been computed in 1989-90 at Rs 3595 (US $ 115), far below the national average of Rs 4252 (US $ 136). The sex ratio was 913, against the national figure of 929 in 1991. Although the southern districts display much higher figures, with Dungarpur reaching a number of 1045 females per thousand males in 1981, this may be due to the mass migration of male workers from these districts to neighbouring states. The total literacy rate is 38.81, with female literacy at an abysmal 20.84. According to 1981 figures, the percentage of females married between the ages of 10 and 14 years was 18.33. More than 77 per cent of the population live in the rural areas of the state, sometimes in remote and inaccessible habitats. About 30 per cent of the population belong to the Scheduled Castes and Tribes. The highest concentration of Scheduled Tribe population in the state, ranging from 34.33 to 72.63 per cent, belong to four districts — Rajsamand, Udaipur, Dungarpur and Banswara.

The Aravalli range of mountains divide the state on a north-east/ south-west axis. Although the Thar desert is inexorably shifting down to the Aravalli wall from the north-west, a few banyan, mahua, mango and wild plum trees have managed to resist both the desert and the ravages caused by the clearing of forests for timber and mining operations. Zinc, silver, lead, sandstone and marble were extracted from the region, increasing the aridity of the land and rendering scarce both renewable and non-renewable resources. In 1975, Udaipur had 4266 sq. km of forest cover, with 101 days of rainfall per year. Ten years later, the forest cover had halved and rainfall had decreased to 64 days per year.

Rajasthan: Infant Mortality Rate, 1991

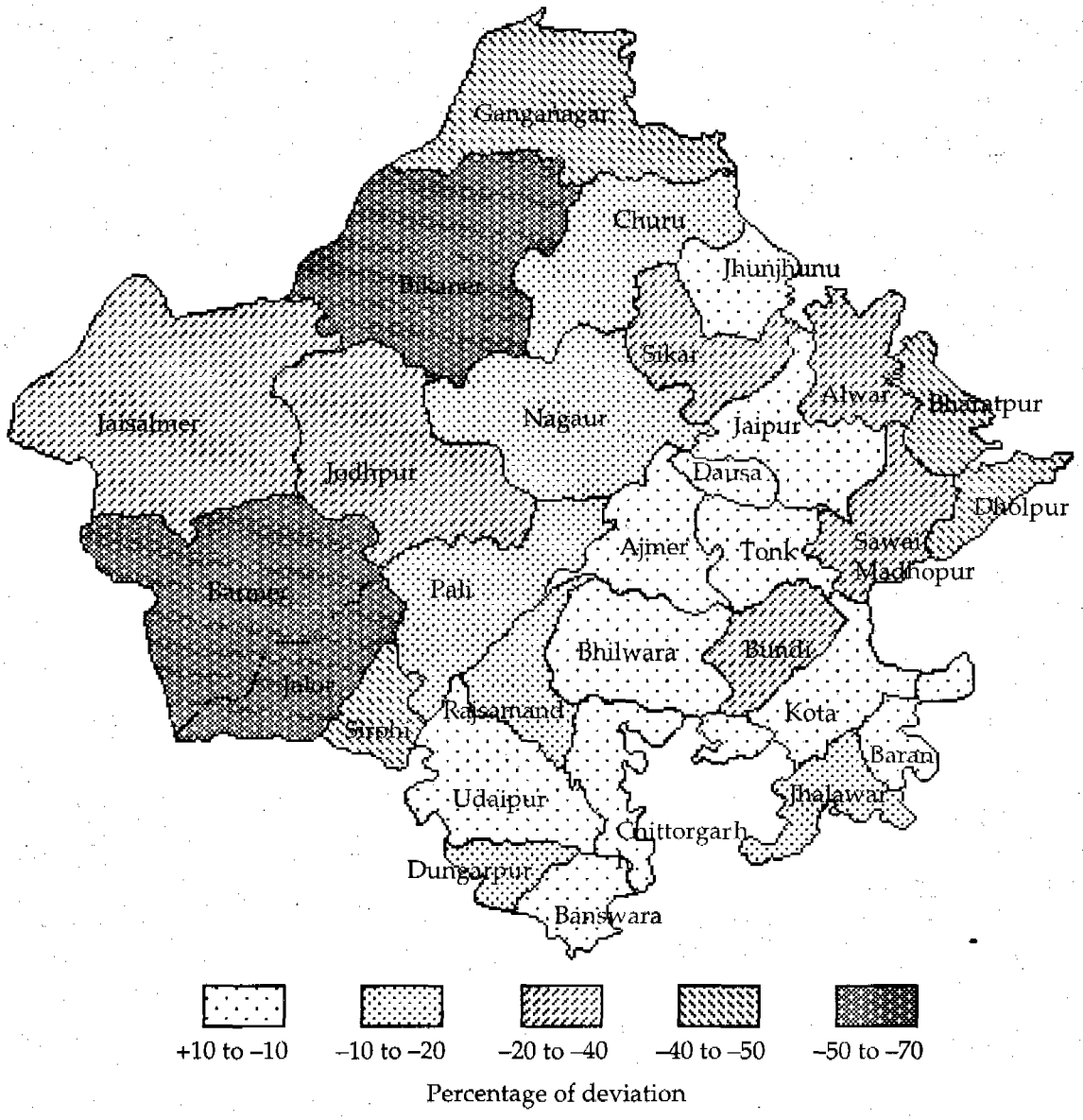


Source: Sample Registration Scheme, Government of India

The face of the hills is scored with the path of many streams, but they were always mainly seasonal. The tribal settlements had open wells and ponds that stored water for both drinking and agriculture. The landlords, who mostly belonged to the warrior Rajput caste, dug more wells out of sub-soil rock, and to make the process easier, made ledges or steps that not only helped to dig deeper, but also made the water accessible when the water level was at its lowest. More elaborate stepwells were commissioned by kings, near temples or on occasions of birth, death, marriage or military victory. In Udaipur, artificial lakes were also built in the name of the queen, as emergency reservoirs. Of the 100 lakes and ponds in the area, two of the largest, Raj Samand and Jai Samand, were commissioned as famine relief work in the last century.

Scarcity of water is particularly visible in Dungarpur and Banswara. In 1981, the proportion of area

Rajasthan: Deviation from Normal Rainfall, 1991



Source: Public Health Engineering Department, Jaipur

under irrigation in the whole of Rajasthan was 21 per cent, while in these two districts it was less than 9 per cent.[1] With only 34 kilometres of national highway in Dungarpur and none in Banswara, several villages have only unmetalled roads which are submerged during the monsoons. Carrying drilling rigs for tubewells to the interiors, therefore, becomes a major challenge.

Today, the main problems of rural water supply in the state can be encapsulated as follows:

- About 40 per cent of the land is desert or falls in the semi-arid zone.
- Desertification is enhanced by scanty rainfall. Deviation from the norm in annual rainfall was 17 per cent in 1991.
- Consequently, the water table is getting lower each year.
- The remoteness of some of the rural settlements makes it virtually impossible for drilling rigs to reach them.
- The groundwater has high salinity and fluoride content: 4280 villages in 21 districts of the state have water with fluoride

content of over 1.5 ppm. More than 5000 villages have water with total dissolved solids (TDS) higher than the permissible limits.

- There is high incidence of guineaworm and other water borne diseases.
- Lack of health education and poor sanitation habits compound the problem of water contamination.

The People

The tribals were here long before the Rajputs came. They lived off the forest products, collecting, using, selling and bartering timber, grasses, honey, beeswax, bamboo and gum. They practised shifting cultivation, growing corn, pulses, and rice on the slopes of hills and on stream beds. With the growth of Rajput feudalism in the mid-16th century, the forest population slowly became absorbed by the tenant landlord system of the Rajputs. Many tribal families came and joined the villages of the Rajputs in the valleys, and settled down in small hamlets — *phalas* or *bhagels* — adjoining the main village.

Today the number of purely tribal settlements has reduced in Udaipur, but Dungarpur and Banswara still have a very high number of tribals in their population. Severe drought conditions and resulting poverty have often led to mass migration of male workers from these parts. The women and children are generally left behind as the men journey to other states such as Gujarat or even Maharashtra, where they work in the industrial centres or the service sector in the cities. ❑

1 *"Managing Guineaworm, Health and Water Supply, the SWACH Project of Rajasthan," Anil Bhatt in association with Salil Dave, Indian Institute of Management, Ahmedabad, 1989, p. 6.*

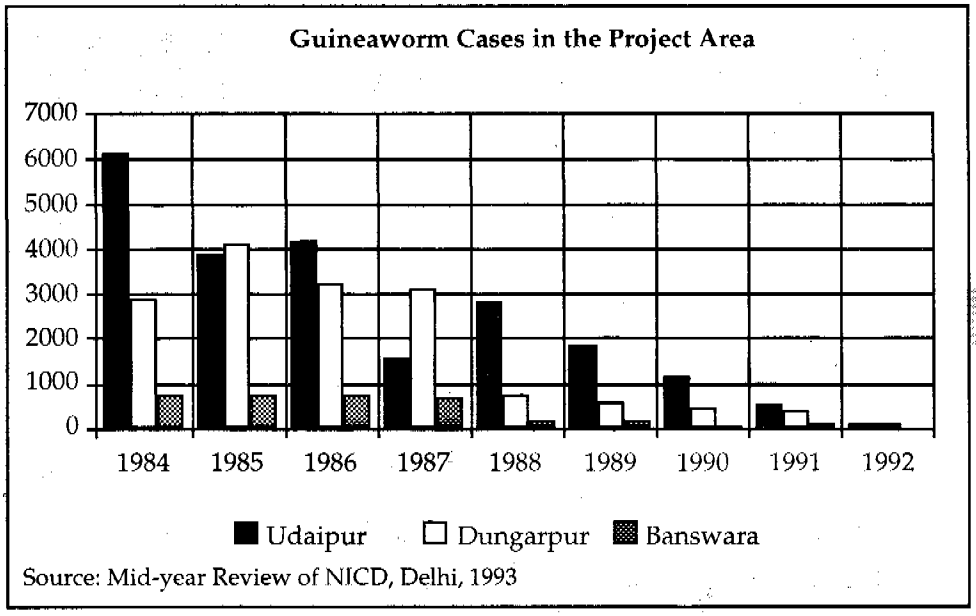
2
The fight against guineaworm

Guineaworms have flourished in tropical, arid climates in African countries and in the Indian subcontinent for generations. Not being a killer, the disease caused by guineaworms did not receive as much attention as it deserved, until the 1980s, when with growing concern about the disease, research was undertaken on the feasibility and economic necessity of control. This resulted in a resolution of the United Nations World Health Assembly in 1986, endorsing the elimination of dracunculiasis (as the disease is medically known) as part of the Clean Drinking Water and Sanitation Decade (1981–90).

The disease has been well documented in various African countries. Dracunculiasis has been shown to be a major cause of school absenteeism and a serious cause of permanent drop-outs. There is increasing evidence that it is also detrimental to maternal and child health. Annual loss in Africa is in the range of 300 million to one billion US dollars a year.

Guineaworm, the focus and entry point of the SWACH project, is endemic in Rajasthan, especially in the southern part of the state. In 1984, there were 6776 affected villages in the state and the number of known cases was 15,210. By the end of 1992, the number of villages was down to 957, with 792 cases. In 1993, there were 545 cases reported by the Medical and Health Department in the State. In 1994, no cases were reported in the SWACH areas of Dungarpur and Banswara and cases were reported in Udaipur. 443 cases were detected in the Western Rajasthan districts of Jodhpur, Nagaur, Bikaner, Barmer & Jaisalmer. In 1995, no cases were reported in Udaipur. Today, the goal of a Guineaworm free state by 1996 no longer seems as unreal as it did when the SWACH project was launched.

Today the patients of guineaworm are primarily the rural poor. But in



Source: Mid-year Review of NICD, Delhi, 1993

the days before piped water, both rich and poor had guineaworm. In southern Rajasthan, where water was collected from stepwells and artificial ponds, the disease was endemic and even the royal family of Mewar has had incidence of guineaworm for at least the past three decades.[1]

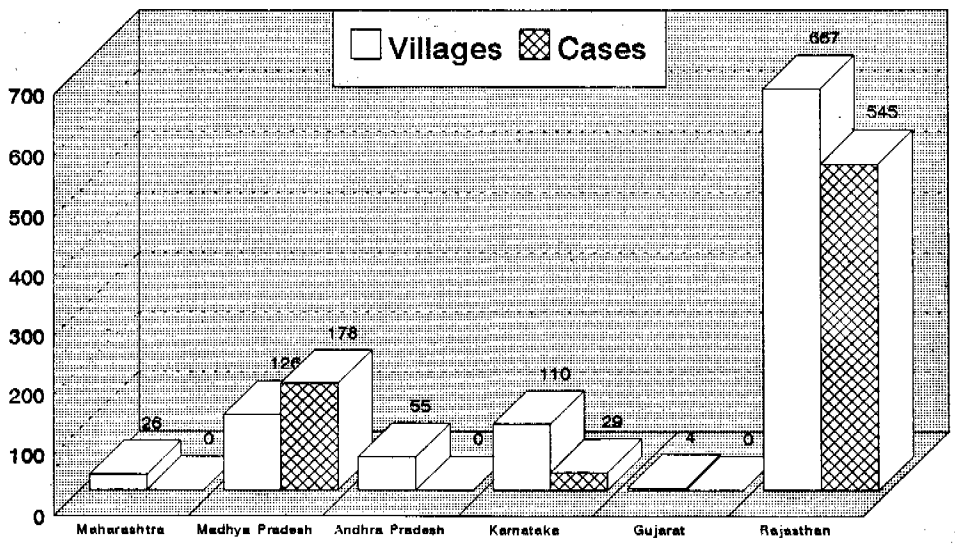
There was no cure for the disease and, more important, no one knew how to prevent it. Patients were treated for abscess and ulceration after the worm had begun to emerge. Even today, traditional practitioners all over the world prefer to allow the worm to come out spontaneously, rather than rupture it and let the toxic reactions follow. To hasten the emergence of the worm, they wrap it on a stick with gentle tension as it emerges — a process that takes many days. Modern medicine can only offer anti-biotic therapy, tetanus toxoid and bandages.

When the Worm Turns

Guineaworm disease, or dracunculiasis, is a parasitic disease caused by the nematode species *Dracunculus Medinensis*. The disease is transmitted to humans when they drink polluted water that contains infected copepods (water fleas which belong to the genus cyclops), which act as the intermediate hosts for the nematode.

Infective larvae of the parasite contained within cyclops are released into the stomach after cyclops are destroyed by gastric juice. Once larvae are freed into the

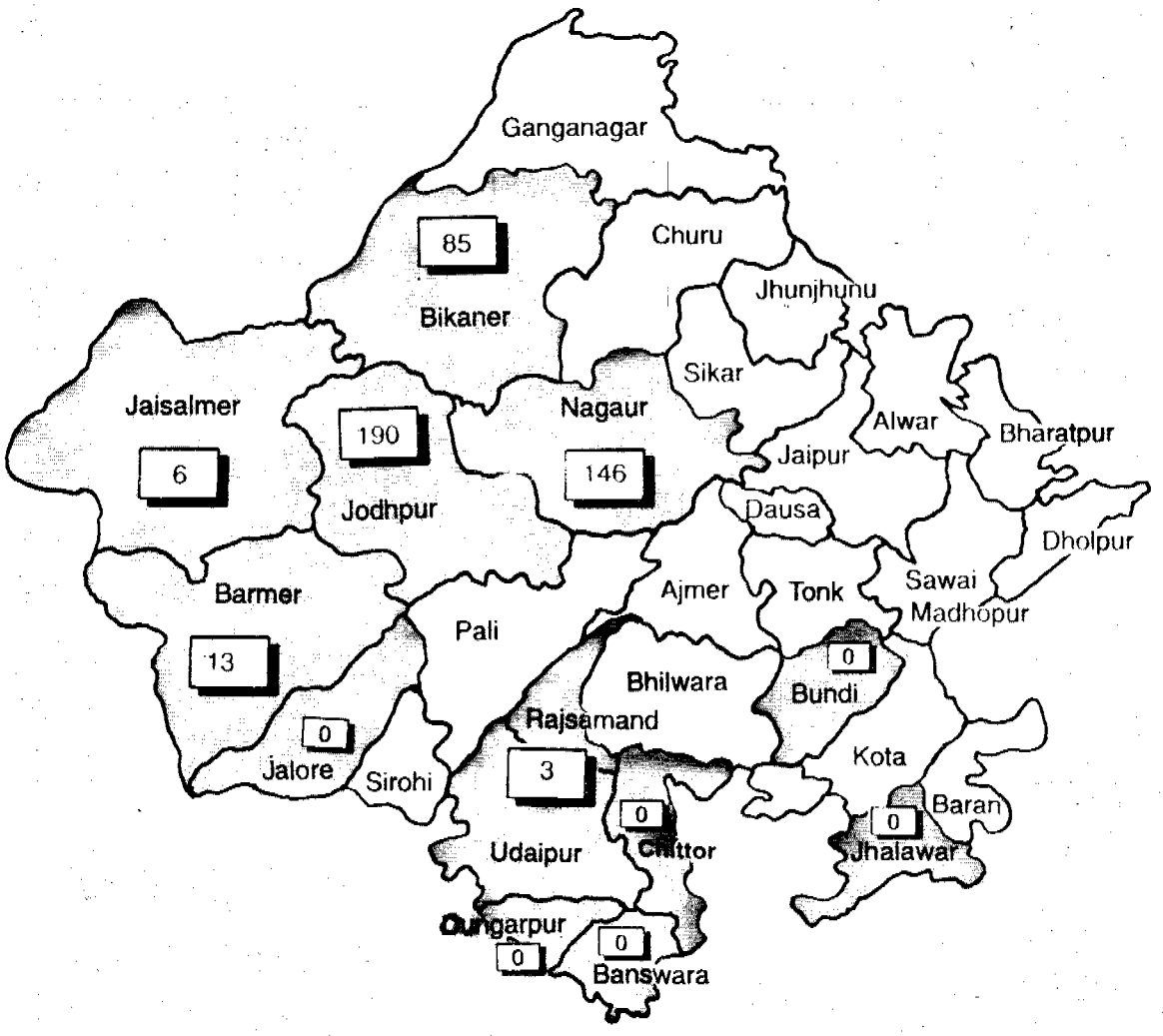
Guinea worm Affected Villages and Reported Cases, 1993



Villages	26	126	55	110	4	667
Cases	0	178	0	29	0	545

Source: National Institute of Communicable Diseases, Guineaworm Erodication Programme in India Fifth Independent Evaluation, December 1993; Medical Health and Family Welfare Directorate, Report of GWEP in Rajasthan, January 1994.

Rajasthan : Reported Guineaworm Cases in the Districts, 1994



Source : Rajasthan Integrated Guineaworm Eradication Project Report and SWACH Report, 1995.

human body, they migrate to the subcutaneous tissues where they mate. The male worm dies, but the female always survives.

The incubation period is from 10 to 12 months, during which time no symptoms occur. After this period, the female worm grows to about one metre long and migrates to a position under the skin, most frequently in the legs.

The mature female worm has a uterus filled with one to three million larvae. Usually a painful blister is formed before the worm emerges through the skin. After the blister bursts, the anterior part of the worm (uterus) is exposed. When the affected part of the body is immersed in water, the worm releases thousands of first-stage larvae. If the worm is not extracted, it will continue to expel larvae for some time, whenever the affected part of the body comes in contact with water.

The larvae released in the water may be ingested by cyclops which mature to the infectious stage, usually in two to three weeks. If a person drinks water with infected cyclops, the cycle starts again.

When the worm erupts, an ulcer usually forms, and physical extraction of the parasite with the traditional method of rolling the worm on a stick is done. The procedure takes from one to three months. Pain and secondary bacteria infection are common. In

Table 1 : Disability and work loss in 161 patients with a single guineaworm, by treatment category

Treatment	No. (%) of patients	Average no. of workdays lost	Average no. of days disabled
Extracted before larvae released	23 (14)	3.1	9.5
Extracted after larvae released	15 (9)	12.5	22.4
Partial extractions	9 (6)	16.1	47.4
Inflammation prevents extraction	50 (31)	18.1	35.2
Abscess drained	36 (22)	28.1	39.1
Ulcer cleaned and dressed	28 (17)	27.4	45.8

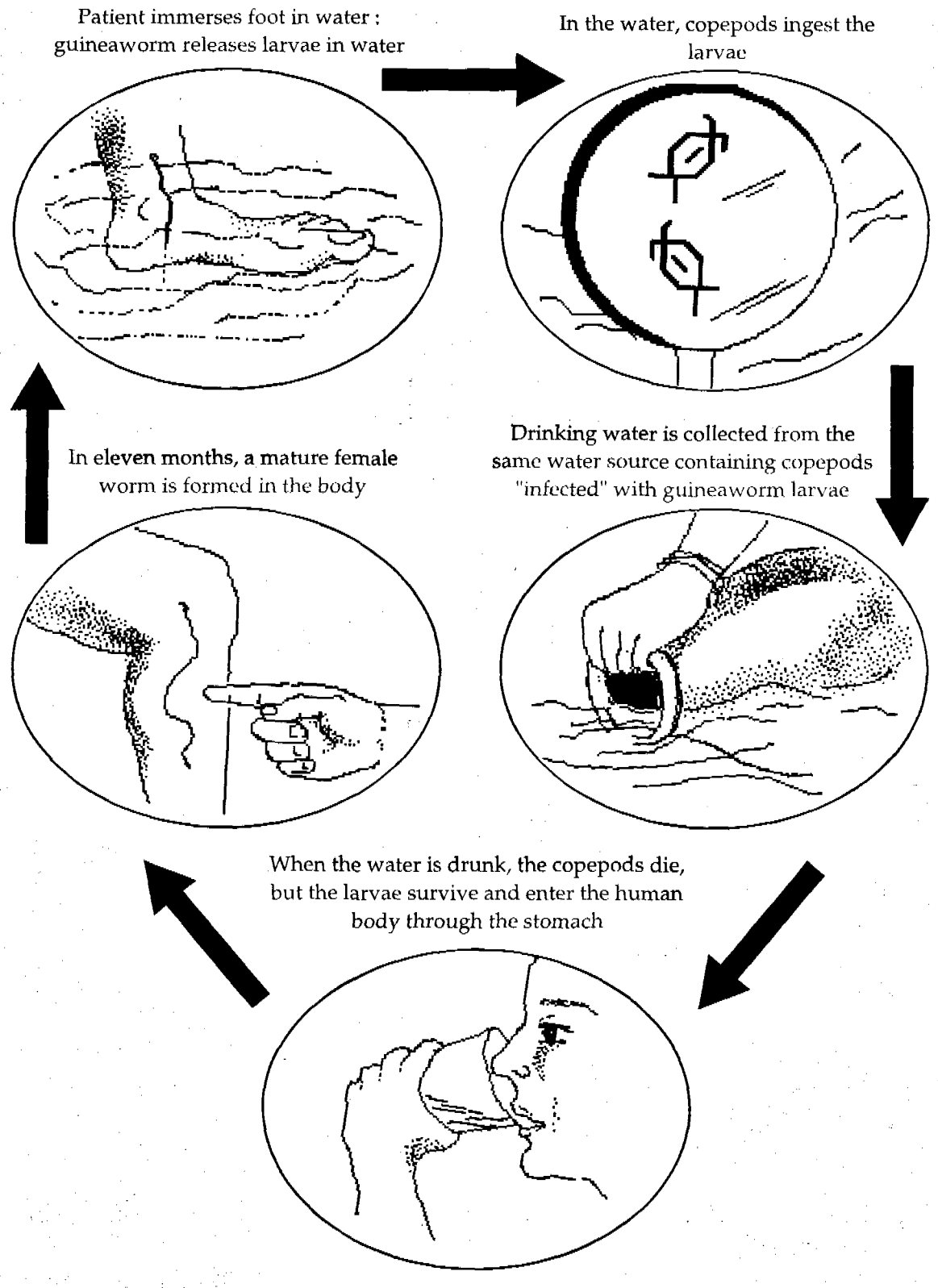
Source: "Surgical Extraction of Guineaworm: Disability Reduction and Contribution to Disease Control", Jon E. Rhode et al, American Journal of Tropical Medicine and Hygiene, 48 (1), 1993, pp. 71–76.

Table 2 : Duration of symptoms and disability prior to treatment, by stage of presentation

Symptoms	No. of patients	Average no. of days since first aware that guineaworm was present	Average no. of days disabled prior to treatment	Average no. of days aware before onset of morbidity
Prior to eruption	23	11.5	4.0	7.5
Erupted but no inflammation	17	17.7	8.4	9.3
Erupted and inflamed	53	25.0	13.5	11.5
Abscess	38	33.8	24.4	9.8
Ulcer	29	39.0	28.9	10.1

Source: "Surgical Extraction of Guineaworm: Disability Reduction and Contribution to Disease Control", Jon E. Rhode et al, American Journal of Tropical Medicine and Hygiene, 48 (1), 1993, pp. 71–76.

The Life-cycle of a guineaworm



some cases, arthritis, deep abscesses and secondary infections provoke important disabilities in the patients.[2]

A Strategy for Change

Guineaworm is the only water-borne disease which is transmitted solely through drinking contaminated water. The SWACH interventions, therefore, were planned

- To interrupt the life-cycle of the guineaworm at multiple points of water utilization.
- To inform the rural communities about the spread and control of the disease.
- To provide curative medication and surgical remedies for those suffering from the disease.

Surgical Extraction

One item in all these intervention methods is unique to SWACH, which has sent the achievement graph soaring within a short period of time — surgical guineaworm extraction. Painless and quick extraction of the worm has led to patients reporting to the medical units long before the disease turns painful. This has resulted in swiftly decreasing the number of patients and has made it possible for the SWACH team to initiate preventive actions before more people get infected by the disease.

During the past 20 years, ayurvedic[3] practitioners in southern Rajasthan have developed this simple surgical procedure to remove the worm before it emerges through the skin. As a patient is generally aware of the presence of the worm about 10 days before it emerges, it is possible to extract it at this stage, thereby reducing chances of transmission of the disease.

SWACH not only promoted and adopted this procedure as part of its guineaworm eradication programme, it also launched a massive effort to inform the people about its efficacy along with that of other preventive measures adopted by the project. The assumption was that a well-informed community, aware of the positive impact of a service would actively participate in the programme and demand that service. ❑

1 "Village Study on Water Use and Perceptions", Chris Deegan, Unicef (Rajasthan), 1990.

2 MPH VBC Tropical Disease Paper No. 4, Donald Hopkins, August 1990. Published under WASH Field Report No. 322.

3 Ayurveda, an ancient medical science that has survived through centuries in India, provides medication distilled from natural sources.

3
From guineaworm to good health practices

The objectives of SWACH go far beyond the eradication of guineaworm:

- To improve the quality of life and socio-economic conditions in the rural areas of four southern districts of Rajasthan — Rajsamand, Udaipur, Dungarpur and Banswara — with special reference to women and children.
- To reduce the incidence of guineaworm, diarrhoea and other water borne diseases among children and other members of the rural population.
- To promote community involvement and self-reliance in the planning, implementation and maintenance of drinking water supply.
- To encourage and sustain good health practices among the rural population.

Two major interventions for achieving these objectives were identified as

- Provision of safe drinking water by means of converted stepwells and handpumps.
- Health education and promotion through village contact teams (VCTs) and existing village level workers.

Thus, SWACH attempted to achieve in the long-term a holistic change in the health perceptions of the rural community which, by providing the environment for increased productivity, would in its turn, critically raise the levels of aspiration for a better life. With guineaworm as its focus, the project could swiftly reach its beneficiaries by promising immediate solutions to a problem that had lasted for generations. Guineaworm was visible, tangible, and painful. By first removing the pain and then destroying the source of the disease, the SWACH teams gained the people's confidence and support.

In the districts of Dungarpur, Banswara, Udaipur and Rajsamand, water, sanitation and guineaworm control activities had always been undertaken by different government departments which operated within the boundaries of the usual rules, regulations and procedures that are necessary features of all broad-based government programmes. This was before SWACH took over. The progress was slow then, not only because of the regulatory constraints, but also because the Public Health Engineering Department (PHED) and the Health Department, which did most of the work, were responsible for the entire state and for many other programmes. The control of guineaworm, therefore, could not become the prime concern of these departments, taking precedence over all others.

This is not to imply that guineaworm had less importance for the government departments. It merely points to the fact that sometimes a single priority area gets submerged in a sea of priorities. A project approach could overcome this hurdle by limiting its activities to a short period of time and a specific area of operation — just where intervention was most needed.

The time limit was possible because guineaworm is a disease that can be eradicated within a short period of time through intensive control measures. But the limited duration also required that the activities be carried out in a swift and sure manner, and whenever a change of direction was required, it was important to take quick decisions and immediate steps. To circumvent these constraints, SWACH evolved a semi-autonomous organization that could provide quicker responses to challenges.

The Organization

To this end, the project was put under the Tribal Area Development Department (TAD), as a part of the Rajasthan Tribal Area Development Cooperative Federation (RTADCF), an autonomous cooperative society. The Commissioner who heads TAD was made the ex-officio Chairperson of SWACH, so that the project could have the day-to-day

Caste Composition of Rural Population in Dungarpur and Banswara

Region	Caste group			
	Scheduled Tribe	Scheduled Caste	High and other castes	Total
Survey districts	1,070,789	65,611	333,732	1,470,132
	(72.8)	(4.5)	(22.7)	(100.00)
Banswara	637,912	38,343	155,158	831,413
	(76.7)	(4.6)	(18.7)	(100.00)
Dungarpur	432,877	27,268	178,567	638,719
	(67.8)	(4.3)	(27.9)	(100.00)

Figures in parantheses are percentages of total rural population.
Source: "A Baseline Study of Banswara and Dungarpur Districts of Rajasthan (India)," Institute of Development Studies, Jaipur, 1986.

support of the government while it retained its autonomy. To give it greater freedom of operation, a separate organization was created solely to run the project, with an Indian Administrative Services (IAS) officer as its director.

The director and his supporting staff were located in Udaipur, the main office of the project. The field offices at the district headquarters were headed by project officers directly responsible for the implementation of the project in their respective districts. Assistant project officers were separately responsible for the technical, educational and medical interventions. A health educator reported to the assistant project officer for education, while junior engineers helped the assistant project officer responsible for technical infrastructure.

Unlike the resource– starved government departments, the SWACH project, with its donor funding, was well-equipped with basic office and transport facilities, thus allowing it freedom from recurring problems of a petty nature in its daily functioning. This made a great deal of difference to the efficiency of the project. Decisions were taken quickly, travel sanctions were worked out on the spot, and the choice of hardware could be based on performance, durability and long-term economy rather than only on the short term gains of the lowest tender submitted.

As the recruitment was limited to the life of the project, all important staff were taken on deputation from different departments of the government. Here, too, the main consideration was not the government rules and regulations as applied to transfers and liens, but the fact that a particular officer was most suitable for the specific job. Officers were interviewed and assessed carefully before they were taken on board.

A Different Style of Operation

From the very beginning, SWACH established a functional style that allowed it to work unhindered by the usual bureaucratic constraints. This was partly made possible by the style of leadership that was in operation in the early years of the project. Also, the contribution of individual leaders throughout the project cannot be overstated.

A certain dynamism was established early because hierarchical job definitions were set aside whenever there was immediate work in hand. Everybody was expected to and did pitch in for all jobs, whether it was a workshop being organized overnight in the city, or a camp being set up in a remote location, or a hitch in drilling operations requiring immediate trouble-shooting. The deliberate and conscious attempt to make the project a combined team effort continued and was evident in both increased efficiency and job satisfaction among the staff. The sense of family became the management strategy for the project, which helped to iron out inter-personal and inter-office problems relatively easily.

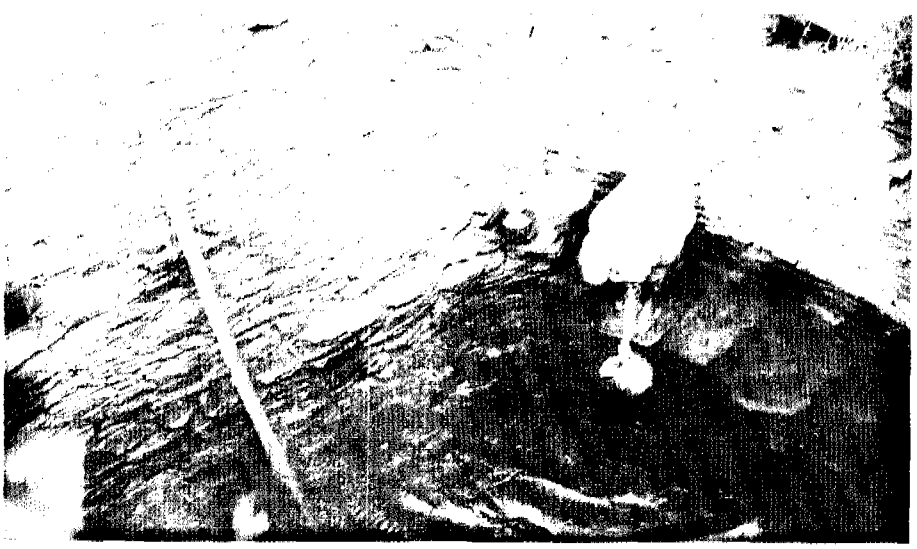
In the Beginning

In 1986, when SWACH first began functioning, its activities were concentrated in 12 blocks of two small districts in Rajasthan —

Dungarpur and Banswara — with a population of 1.8 million people. In 1988, with the inclusion of Udaipur and Rajsamand, the number of people served by the project rose to nearly five million. The target group belonging to 5270 villages in the four districts, were primarily of tribal origin, on the lowest rung of the economic ladder, mostly non-literate and victims of water scarcity and drought conditions.

In the same year, when the Institute of Development Studies (IDS), Jaipur, undertook a baseline survey in the project districts of Dungarpur and Banswara, they found that the region suffered regularly from droughts, resulting in famine in the rural areas. The land-holdings were small and generally low-yielding, and a large number of the population earned a livelihood only seasonally, as landless agricultural labour. The region represented a rugged terrain, drained by the river Mahi. Deforestation in the hills had led to massive sheet and gully erosion and the gradual silting up of the river basin. The water table varied from 3 to 15 metres below the ground. The existing water sources included some 5000 tubewells fitted with handpumps, an estimated 2700 stepwells and a large number of both community and private open wells.[1]

The survey stated that the total cultivated area in the two districts came to a mere 37.3 per cent, while only 8.8 per cent of it was irrigated. Wells, tubewells and artificial lakes were the main sources of irrigation. With an appalling literacy rate and lack of health aware-ness, the people, especially children, chronically suffered from water borne diseases. The incidence of guin-eaworm disease was so high that the two small districts together accounted for 27 per cent of all 6100 guineaworm infested villages in the entire state and 11 per cent of all such villages in the whole of India.



The Preparatory Phase

The first of the series of studies was a hydrogeological assessment which indicated adequate availability of safe drinking water for the scattered population in the project area. Estimates were made of the number of stepwells to be converted to draw wells, the number of new water sources to be constructed and old ones improved, and the resource and training needs for field staff and voluntary workers.

A limited sociological study, too, was carried out to determine community attitudes towards drinking water and health in the rural communities and the problems faced, specifically, by women in the collection and distribution of water for the family.

In December 1985, a workshop was held in Udaipur, attended by the concerned local agencies and non-governmental organizations (NGOs) working in the villages. The NGOs associated with the project were Seva Mandir, Social Work and Research Centre, Bharatiya Lok Kala Mandal and Mira Kala Mandir. At the workshop, the participants evolved methodologies and organizational arrangements for the training of different levels of officers and field staff. They also planned the development of training materials.

Based on the findings of the studies and the recommendations of the workshop, a Plan of Action was drawn up jointly by Unicef and the Government of Rajasthan. For those involved in delineating the perimeters of future project activities, this was in itself a learning process which they would utilize later in the implemen-tation and moni-toring of the project.

Literacy in Dungarpur and Banswara

	Rajasthan	Banswara		Dungarpur	
	Total	Total	Rural	Total	Rural
Male	36.3	26	23	23	26.6
Female	11.4	7.5	5	5	5.7

Source: "A Baseline Study of Banswara and Dungarpur Districts of Rajasthan (India)", Institute of Development Studies, Jaipur, 1986, Table 2.81.

Finally, early in 1986, the IDS baseline study was commissioned, which was to form the basis for impact assessments and evaluations in later stages of the project. The study was expected to analyse the socio-economic variables in the two districts of Banswara and Dungarpur and relate them to the general issues of health and morbidity with special reference to the guineaworm disease.

The preparatory phase also envisaged the initiation of a limited number of field activities. This was designed to fulfil three objectives:

- It would build and sustain local interest in the project and give it a lasting and positive identity.
- It would develop, through direct field trials, more appropriate methods of raising awareness and involving the local community in the conversion of stepwells and the installation of handpumps.
- It would generate more data that would help to give the Plan of Action its final shape.

Logistics problems, such as procuring riser pipes for the installation of handpumps, or even filling all the posts on the organization chart, slowed down the process in the beginning. The quantitative expectations of the initial field activities proved too ambitious, but the modest achievements once again proved to be a learning process of immense value. Twelve stepwells were converted to draw wells during April and May 1985 by the block authorities. The experience revealed that the technical aspect of the work was complicated enough for the Gram Panchayat to undertake it on their own in the future. In addition, some of the required transport vehicles were purchased during this period, drilling equipment was ordered and

Villages, Population and Households in Survey Districts

Name of Panchayat Samiti/Block	Number of Villages	Area (000 ha)	Population (000)	Households (000)
Banswara District	1463	503.3	831.4	140.1
Ghatol	222	77.8	135.2	23.6
Garhi	167	71.1	152.0	26.0
Banswara	221	75.6	134.5	23.5
Bagidora	136	52.2	105.5	17.1
Kushalgarh	210	65.2	73.9	11.7
Sajjangarh	186	39.2	75.9	12.3
Bhukhiya	123	33.7	63.3	10.5
Peepalkhoont	198	88.4	91.1	15.1
Dungarpur District	837	379.3	638.7	113.8
Aspur	144	68.3	122.0	23.7
Sagwara	146	59.0	128.8	22.8
Simalwara	216	126.0	145.9	26.0
Dungarpur	156	54.8	103.7	18.2
Survey Districts	2125	811.3	1331.8	230.8

Source: Census of India, 1981, District Census Handbook for Banswara and Dungarpur.

a training programme for the VCTs was prepared.

Getting to Know the Community

The studies and the interventions at the preparatory stage had opened a window into the community in these two districts. Additional information came from official reports and the 1985 Search Report of the Health Department which stated that there were 3306 cases of guineaworm in Dungarpur district and 654 cases in Banswara. However, it would be prudent to remember that these figures belong to pre-SWACH days, when lack of information or interest would result in under-reporting of guineaworm cases. The figures were probably much higher in reality. According to the report there were 516 guineaworm affected villages in the eight blocks of Banswara and 611 in four blocks in Dungarpur; the number of stepwells was 700 in Banswara and 2000 in Dungarpur.

The baseline survey brought to light a generally neglected factor in interventions in water supply: the preference for a particular water source on the basis of individual taste rather than availability or accessibility. Even in a land hit by drought, during times when water is available, people exercise their personal choice in the matter of collection of drinking water. This was later confirmed by a 1990 Unicef commissioned study in Udaipur. Most of the villagers prefer to drink well water rather than the water from handpumps which is stated to be metallic in taste and not as "sweet" as well water.[2]

Later surveys, such as the one undertaken in 1989 by the Indian Institute of Management, Ahmedabad, in the first two project districts, mention another factor that operates in rural communities which limits the efficacy of development efforts. A conceptual understanding of a health need does not always translate itself into effective action. Thus, although the survey team found that the knowledge about the necessity to filter drinking water was present in the villages, many homes still did not possess the double coloured filter cloth that was being distributed by SWACH at the time, nor were they overly concerned about it. Instead, they often used a single layer of thin cotton cloth which would not block out the cyclops carrying the guineaworm larvae. Incidentally, the double coloured cloth filter was devised so that it would be easy to remember to have the white side up always while filtering water. Its effectiveness was later questioned and the cloth filter was replaced by a plastic funnel filter with a High Density Polyethylene mesh.

In statistical terms, amenities, although only of a basic nature, are available in some villages in the project area. But these villages are very few in number. Also, statistics cannot reflect the exact state of these amenities and to what extent all of them are functional all the time. By most recognized indicators of development, Banswara and Dungarpur would be identified as two of the extremely backward

Villages Without Basic Amenities in Dungarpur and Banswara

Basic amenities	Number of villages without amenities and their distance from villages with amenities							
	Less than 5 km		5 to 10 km		10 to 15 km		Total	
	B.wara	D.pur	B.wara	D.pur	B.wara	D.pur	B.wara	D.pur
Educational facility	552	220	22	11	4	-	578	281
Medical facility	829	435	342	209	125	60	1296	704
Drinking water	10	2	1	-	1	1	12	3
Post and telegraph	842	487	271	88	164	30	1277	605
Market	315	25	338	39	770	77	1423	141
Communication	708	410	271	140	212	56	1191	606

Source: "A Baseline Study of Banswara and Dungarpur Districts of Rajasthan (India)," Institute of Development Studies, Jaipur, 1986.

districts of the country. Similarly, the positive sex ratio can be misleading as it is skewed by the fact of seasonal migrations by male members of poor families to places of work in neighbouring states.

The survey also noted the advantages of the social composition of the region — the predominance of Scheduled Tribes in the population of the two districts. Although dominant caste structures and economic interests do exist in the area, in a large number of villages where Scheduled Tribes are the major social group, socio-economic differentiation in the ownership of land and livestock as well as class distinctions are not significantly present. However, the official power structures, such as the local Panchayat, the lower levels of government and police bureaucracy, petty traders and contractors play important roles in community decision making.

Planning Intervention

The project's stated objectives were translated into the following action plans:

- Assist villagers in upgrading existing unsafe water sources such as stepwells.
- Provide new tubewells fitted with handpumps to habitations suffering from scarcity of safe water supply.
- Strengthen and further improve operation and maintenance systems for handpumps and converted stepwells.
- Establish a process of continuous health education in the project area.
- Improve domestic and environmental sanitation to reduce incidence of water borne diseases.

The approach adopted by the project was based on certain fundamental principles, the first of which was that all interventions had to be carried out with the full consent and participation of the community. Special emphasis was placed on women's involvement as it was their responsibility to collect and organize the distribution of water within the household.

Although the implementation of the project's aims would be carried out by various official organizations working in the field of water and sanitation, it was considered important that the project take responsibility for ensuring that these interventions were coordinated and integrated at the village level.

Training was considered to be important in initiating and sustaining the planned changes and the project was to undertake the task of building up skills, methods and organizational capacity among its own staff as well as among those of participating agencies.

It was also decided that besides implementing the hardw are infrastructure for safe water supply and environmental sanitation, the project should also provide intensive health education in schools, adult and non-formal education centres, health institutions and anganwadi centres.

The project would naturally seek the support of change agents already working in the village, such as teachers, health guides, para-medical workers and traditional birth attendants, and provide them with additional training and information that would help pursue the objectives of the project. However, the core person to initiate and mobilize support for the project in the village would be the "social animator", a person who belonged to the same community, who would be continuously trained and supported by the project.[3]

A Multi-directional Endeavour

SWACH evolved a number of programmes in an effort to create a wide network of activities, all of which ultimately converged upon the fundamental issues of health and a more productive existence in the rural community in these districts. Today these programmes operate across all four project districts.

- Orientation programmes were organized for officials, middle level managers and grassroots functionaries of various government departments, such as PHED, which was instrumental in implementing the hardware infrastructure necessary to the project; the Health Department of the state government; the Integrated Child Development Services (ICDS) which has direct access to the youngest children and their mothers with its integrated programme for health and education; the Women's Development Programme (WDP) which mobilizes women for empowerment in village communities; and the Education Department of the state government. The programmes provided information about

SWACH activities and encouraged inter-departmental collaboration.

- SWACH activities required the cooperation of the people the project was designed to benefit. All long-term interventions envisage a stage when development efforts must be sustained by the beneficiaries. No outside agency, be it government or voluntary, can take permanent responsibility for people's lives, without critically injuring the community's internal impetus for change. To involve the people in their efforts, therefore, SWACH organized village contact drives, when villagers would tell other villagers about SWACH objectives.

The village contact drives used both traditional and modern communication methodologies. A team of two men and two women were trained from each Gram Panchayat.[4] For 15 days the team spent a day in each village under the jurisdiction of the Gram Panchayat, spreading the SWACH messages through house-to-house contact and organizing group meetings, cultural shows, posters, slogans and school parades. In the process, the team gathered information on water, sanitation and the incidence of guineaworm.

- From April to June, the main guineaworm season when the mature female worm erupted out of the body of its human host, SWACH ran special campaigns to inform villagers about the prevention and treatment of the disease. Specially trained teams went to villages where guineaworm was endemic, organized meetings and cultural activities which entertained while they educated. The effort was to make the villagers willing participants in the sharing of information.

- In selected villages, animators were chosen from women's groups already active in the village, to provide continued health education and maintain a link between the project and the community. They were chosen for their interest in the work, their ability to articulate and discuss the concerned issues and their acceptability in the village community. Each animator worked to bring about changes in health behaviour in her own and two nearby villages. The aim was to promote personal and family hygiene, environmental sanitation, care and maintenance of handpumps, use of safe water and the prevention of guineaworm disease.

- SWACH also supported local NGOs to run three-day awareness camps, where village women were given information on SWACH concerns and encouraged to improve conditions in their homes and community.

- Village contact drives, animators and Health Department searches together provided SWACH with reports of guineaworm patients. In 1991, SWACH started recruiting scouts — young men from villages with a high incidence of guineaworm — who were trained to detect and report guineaworm patients in the early stages of the disease. Through their efforts, many patients were treated before they could transmit the disease.

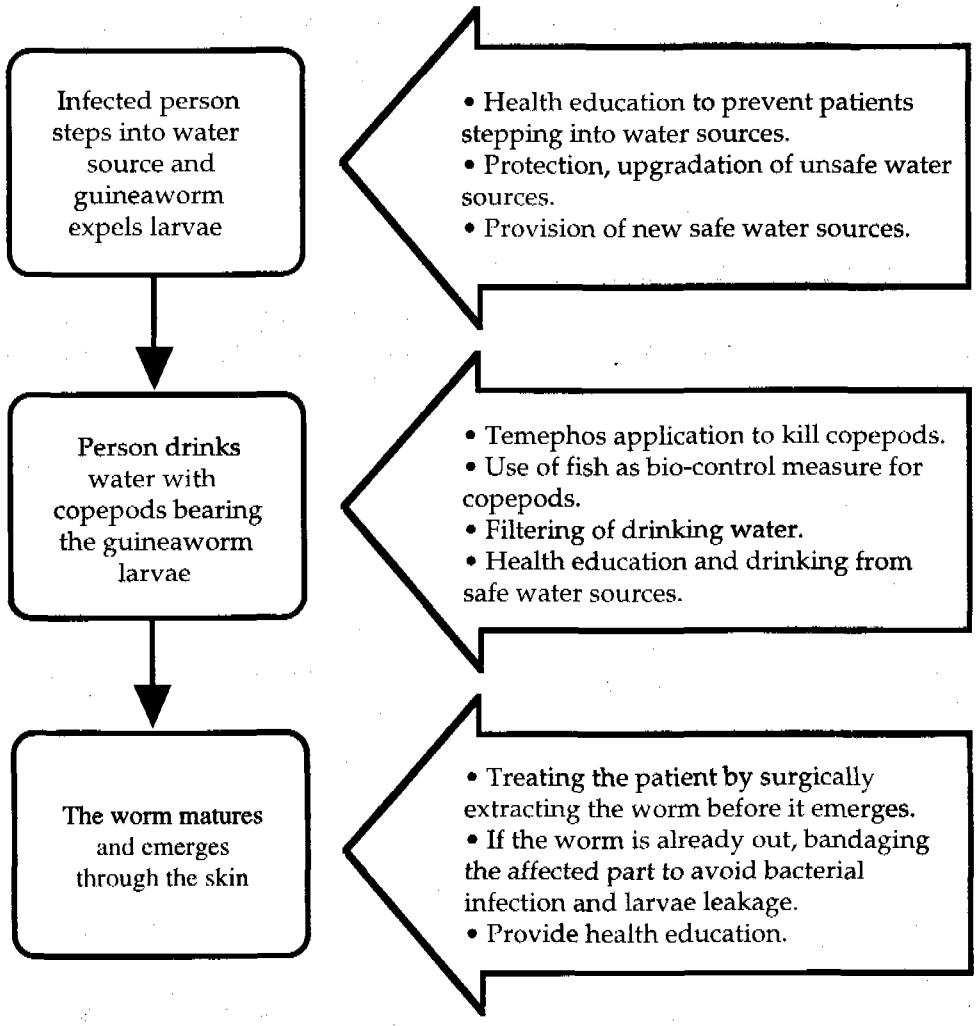
- The scouts brought the patients to the special treatment camps organized by SWACH mobile medical teams. Here the patients underwent a safe surgical procedure to extract the worms. They were also told about how to prevent guineaworm and given water filters for their drinking water. The patients helped the SWACH team identify infected water sources and the District Health Departments were called in to treat wells with temephos, a chemical harmless to humans.

- On the basis of information received at the camps and from other sources, stepwells in the villages of guineaworm patients were converted to draw wells, to prevent patients from walking into the water and transmitting the disease.

- SWACH gave priority to remote guineaworm affected villages and hamlets. Once the handpump sites were chosen by the village women, the SWACH hydrogeologists surveyed the sites. The PHED were called in to drill the finally recommended sites and contractors under the supervision of PHED and SWACH installed the handpumps.

- Generally, handpumps in rural

Breaking the Life-cycle of a Guineaworm



areas are not perceived as the responsibility of any individual or community, because in most cases, they have been installed by some outside authority. Attempts to provide safe water through the installation of handpumps have often failed with the first instance of mechanical breakdown. SWACH trained local women in handpump maintenance. As the women are the ones most affected by water scarcity, they were willing to take the responsibility, and handpumps usually remain in working order in the project villages. Meanwhile, the women developed a new status by successfully undertaking what was considered a man's job.

- Although a platform was built around a handpump, the water draining out of the platform tended to collect in the surrounding grounds in stagnant pools. To avoid the health hazards thus created, SWACH designed washing platforms and cattle troughs which collected waste water for reuse. A further addition was a drain leading off the washing platform to water a small kitchen garden which the villagers were encouraged to plant near each handpump. As the locally made soap used in these villages does not contain chemicals, the drained water cannot harm the vegetation.

Guineaworm Patients Treated by SWACH Teams in 10 Blocks of Udaipur, 1988 and 1990

	1988		1990	
	Guineaworm patients	Affected villages	Guineaworm patients	Affected villages
Kumbhalgarh	55	14	83	30
Nathdwara	69	8	0	0
Gogunda	462	23	116	21
Girwa	94	9	62	18
Kotra	44	5	72	6
Jhadol	697	79	238	54
Dhariawad	107	3	58	10
Sarada	549	42	436	74
Salumber	301	34	135	32
Kherwara	255	23	3	3
TOTAL	2633	240	1203	248

Source: "Village Study on Water Use and Perceptions and Statistical Profile on Treated/Reported Guineaworm Patients and Villages", Chris Deegan, UNICEF, 1990.

- Although SWACH did not build latrines and urinals for individual homes, it encouraged villagers to do so by providing a subsidy and building simple, easy to replicate, demonstration units in selected schools in the project area. The school units are used and maintained by the students and teachers themselves.

Expanding Horizons

Because of the high incidence of guineaworm in Udaipur and Rajsamand, in 1988, the project area was extended to include these districts. Work was concentrated initially in the southern part of Udaipur district, in 10 blocks with a high incidence of guineaworm.

Udaipur and Rajsamand have a lower concentration of tribal population than the first two project districts. However, the general conditions of life are very similar to those already studied in the preparatory phase. The habits, attitudes and social and economic status of a majority of the rural population in Udaipur are no different from those of people in the neighbouring districts of Banswara and Dungarpur.

In 1988, the total number of villages in the 10 blocks of Udaipur was 2135, with a population of 1,604,653, of whom 729,696 were of tribal origin. The number of purely tribal villages in these 10 blocks was 381.[5] Between 1988 and 1990, SWACH medical teams treated a total of 6415 patients (not counting the repeat patients) in this area. Among the patients treated by SWACH medical teams, children below the age of 15 numbered 653 in 1988, 715 in 1989 and 347 in 1990. These were crucial years for guineaworm detection in Udaipur. As the villagers became acquainted with the organized services of SWACH, their awareness increased and more and more guineaworm affected people reported to the medical teams well in time for the worms to be surgically extracted.

1 IGEP Plan of Action, 1986–1990, Jointly Prepared by the Government of Rajasthan and UNICEF.

2 "Village Study on Water Use and Perceptions and Statistical Profile on Treated/Reported Guineaworm Patients and Villages", Chris Deegan, UNICEF, 1990.

3 IGEP Plan of Action, 1986–1990, Jointly Prepared by the Government of Rajasthan and UNICEF.

4 An elected body headed by the Sarpanch, which forms the local self-government unit for a cluster of about 15 villages.

5 "Village Study on Water Use and Perceptions and Statistical Profile on Treated/Reported Guineaworm Patients and Villages", Chris Deegan, UNICEF, 1990.

4
Communicating the SWACH message

Guineaworm disease is transmitted through contaminated drinking water—this was the first important message SWACH had to communicate to its target audience. It took a lot of thinking and strategic planning before the message could be transferred simply and convincingly. The second important message was — the water was contaminated by guineaworm patients who entered the water source. And that marked a return to the cycle of infestation.

Even today there may be only a few villagers in the four SWACH districts of Rajasthan, who fully comprehend the life cycle of the guineaworm; but each and every villager can describe how to rid the village of guineaworm—by filtering drinking water with a funnel filter and by not allowing guineaworm patients to step into a water source. They also know a far better way of curing the disease — by extracting the worm surgically, before it forms a blister on the skin.

And yet, most of these people belong to the poorest section of society, with little or no literacy skills, who are thus inaccessible to sophisticated urban modes of communication. How then did the messages get communicated?

The Awareness Campaign

The village contact drive proved to be a successful SWACH strategy to reach the maximum number of people in the shortest period of time. The first village contact drive, in September 1986, had 90 VCTs travelling on foot covering 977 guineaworm affected villages in the districts of Dungarpur and Banswara. Each of the VCTs comprised two male and two female members who had undergone a five-day residential training course. By 1990, SWACH had organized two village contact drives in Dungarpur and Banswara and two in Udaipur.

The drives were organized for a twofold purpose: to elicit health and sanitation information from the villages covered and to educate and inform the people about guineaworm disease and other health concerns. However, a certain flexibility was built into the concept of the drive and each drive accomplished a slightly different set of tasks.

The first drive covered only those villages in the districts of Dungarpur and Banswara which were known to have had a high incidence of guineaworm in the past. The second drive, which took place in April-May 1987, covered all 1962 villages in these two districts with the help of 188 VCTs. The third drive in June 1988, covered all guineaworm endemic villages of nine Panchayat Samitis in southern Udaipur. The fourth drive was carried out in two phases, through May and June 1989, in all 18 Panchayat Samitis of Udaipur and Rajsamand, when 300 VCTs visited 3117 villages in these districts.

The team members were local men and women selected and trained by SWACH. For the selection of the team members, SWACH had requested the recommendations of various rural level functionaries, such as the Panchayat, the Block Development Officer (BDO), the Sarpanch and the Gram Sevak, as well as agencies working in the area such as the ICDS, the Non-formal and Adult Education Department, the PHED and the Health Department.

Training the Trainers

The recruits needed sufficient knowledge about the messages to be disseminated and some communication skills. SWACH trained and utilized the District Training Teams (DTT) for this purpose. The DTTs comprised school teachers, district education officers, health department staff, SWACH workers and members of non-governmental organizations (NGOs). A week-long training of the DTTs was undertaken before each village contact drive was organized. NGO participation in the training programme increased with the number of drives. In the fourth DTT composition, out of 29 DTT

members, 21 were from NGOs governmental Organizations (NGOs) like Astha and Seva Mandir.

The training programme for the trainers included information about the life cycle of the guineaworm and methods of preventing the disease; basic information about safe drinking water, health and environmental sanitation; training design and monitoring methodology for the village contact drives; and communication skills, including folk media, especially puppetry.

Transferring Skills and Knowledge

Once they had completed their training, the trainers were divided into groups of three to four members. Each group was assigned to a Panchayat Samiti, to train 30 to 40 recruits for the VCT's. Each of these training sessions took four days, with the trainers on the job for a total period of about a month or more. During the sessions, the recruits were not only provided with much of the information that SWACH had passed on to the trainers, but were also taught the method of collecting relevant information from the villagers and communicating to them the various SWACH messages. The recruits were also given a training/ demonstration kit to use in the field.

For the first village contact drive, the demonstration kit included what was then considered a comprehensive repertoire of items. However, experience led the SWACH workers to realize the irrelevance of some of them. This is typical of the entire effort — communication was never just in one direction. The community had much to teach as well.

That first kit had things like a guineaworm in a bottle. But the villagers already knew what it looked like! It had audio cassettes of Bagri songs and devotional music artfully rewritten to include information about guineaworm and improved health practices. Members of the VCTs discovered that it was much more effective to get the community to sing the songs with the new words. After all the tunes were as old as the hills. Also, there were never enough tape-recorders to go round. In Udaipur and Rajsamand later on, Mewari songs and poems replaced the Bagri ones.

The kit contained multiple pieces of filter cloth for distribution. In the early days, each filter was really two pieces of cloth stitched together, coloured on one side and white on the other — a clever device to make it easy to remember that the right side up while filtering was always the white side which caught the floating dirt in the water. Experience and laboratory tests showed that the cloth, despite its close weave and double thickness, did not keep out the smallest of the cyclops. It was swiftly replaced by a mass produced funnel shaped plastic filter with a fine mesh at the bottom. To replace the mesh when worn out, a small plastic cap was designed with a similar mesh, which neatly fitted on to the bottom of the filter. Later, the village level workers, the animators and scouts, mostly carried only the replacement caps in their kits.

The original posters in the kits were printed in single colour and it was felt that these were not so easily comprehensible. Therefore, the posters were revised later and printed in two colours for further clarity.

Puppet shows were developed only during the fourth village contact drive and proved to be a great success. The animators and scouts performed in the shows themselves, improvising on their stories as they went along. The puppets often talked directly to the villagers, drawing them into a lively exchange of views and in the process, passing on information on health and guineaworm disease.

Health education was a major component of the project. Suitable educational material was developed by SWACH with the help of local artists and educators. The process started with the organization of a workshop where project personnel and artists, poets and composers pooled their resources to create the most effective means of communication. Both medium and message were discussed at length, keeping in focus the extensive oral traditions of the area. Folk and traditional songs were adapted to convey messages regarding health, sanitation and safe water. The material was tested in the field before being mass-produced, to determine the level of comprehension and acceptance in the community.

The process included a review of materials produced for earlier drives, which helped to retain flexibility of design, and changes could be incorporated from time to time according to the immediate needs of the project.

The SWACH message used every medium that could possibly be utilized to reach the rural audience. While hardware interventions for safe drinking water began with the inception of the project, a large training network was developed to create a body of grassroots-level workers, the animators, who belonged to the community and became key personnel in both formulation and delivery of project objectives. Audio-visual communication strategies and material were developed through discussion and interaction with grassroots-level workers and local artists, poets and composers. The participatory nature of the project ensured that, in the final stages of the project, the people themselves became the medium for further transfer of knowledge and information on guineaworm eradication, safe water and environmental sanitation.

Many activities were undertaken as part of the village contact drives. Children were taught relevant slogans and taken out in a procession in the morning. This was the *Prabhat Pheri*. Group meetings were held during the day to discuss health problems and their solutions. Slogans were written with the involvement of the villagers and posters were pasted on the walls of dwellings. Door to door visits by the VCTs brought the SWACH message home to everyone and at the same time, the teams collected information on guineaworm patients, drinking water sources and sanitation requirements. Where necessary, sites for handpumps were identified in consultation with village women.

Local opinion leaders like the Sarpanch and the school teacher were drawn into the programme for the day, along with the field functionaries from various government departments. At night, puppet shows and cultural programmes organized by the VCT with help from the villagers enlivened the process of learning for the community.

The drives were organized as an annual event and worked also as a self-monitoring device for the entire project.

The NGO Contribution

At one time, NGOs working in the villages of India were perceived as more appropriate alternatives to government intervention at the micro level. But that was a long time ago. The concepts and strategies introduced and developed by them twenty years ago have consistently percolated to the macro level government programmes. Today, there is a definite effort within the official development bureaucracy to emulate or adapt the NGO strategies wherever possible and the small agencies are considered a valuable asset for supportive work in the field.

In the four SWACH districts, a

network of NGOs have been assisting the project in various capacities. During the village contact drives, the NGOs helped to identify participants from the villages; they also worked with SWACH in the implementation and follow-up of the drives. Organizing training programmes for an increasing number of VCTs was their responsibility, as was conceptualizing and running awareness camps for women.

The women's camps were organized to mobilize the local women in various health and environmental activities, and draw them out of the secondary existence that patriarchal social norms have imposed upon them for generations. Seventy-two camps were organized in 1989, for example, attended by 2409 women from Udaipur and Rajsamand.

Capacity building is an area where the NGOs have been making on-going contributions. NGOs like Astha from Udaipur, Chetna from Ahmedabad and Parvati from Maharashtra have assisted SWACH in designing and conducting the training programmes. This includes the development of training modules for the training of supervisory staff from various departments of the government.

The NGOs were also instrumental in the planning and developing communication materials used in the SWACH programme. Apart from the workshops where communication materials were discussed, reviewed and formulated with the help of the NGOs, the SWACH intervention approach was covered on video as a result of a collaboration with Video SEWA from Ahmedabad.

Communicating the SWACH Message

The SWACH message emphasized health education, better health practices and guineaworm eradication, as part of an integrated effort to improve the quality of life for the rural people of these districts. With guineaworm eradication as its most visible entry point, the project has been able to draw upon the community's own resources and initiate a process of change in the attitude towards family health and hygiene. The direct involvement of the community in the project has also resulted in greater information sharing and a sense of empowerment among women who

have played important roles in the project as animators and handpump mechanics.

The Lessons Learnt

A multi-level evaluative structure began with the animators who were also the major record keepers of the programme. SWACH called upon outside expertise from time to time to support and enrich the internal evaluative machinery. Specialist organizations and individuals have undertaken a large number of studies of different aspects of the project throughout its lifespan, auditing its progress, its problems and its lessons. These studies have resulted in, among other things, a large body of recommendations that reflect some of the problems that arise in such a project as well as provide possible solutions. They have also established that the project's innovative structure and its unique method of safe surgical extraction of guinea worm are important contributions to similar efforts all over the world.

Guineaworm, although it once affected rich and poor alike, is now more or less confined to communities deprived of health information and facilities in resource starved countries with a tropical climate. The SWACH experience is particularly valid for environments where a vast number of people have to make do with inadequate health delivery systems and limited facilities in their daily lives. ❑

5
The personal touch

She is 18 years old and her name is Jamkubai. She has read up to the seventh class. Even though as a child she married someone equally young chosen by her family, she still lives in her father's home. She will begin the life of a married woman soon enough, but perhaps she will never be quite like the other girls in the village. She even looks different from her friends, some of whom gather round her to help carry her load of paper. She is more businesslike, with little of the traditional colourful ornamental exterior of the Rajasthani village belle.

Jamkubai is an animator for SWACH.

The Animator

She is known as *sachetak* in the local tongue. She is the vital organic link between the project and the community.

With water and sanitation as two of the major concerns of the project, it was decided that the animator should ideally be a woman. In the household, water and sanitation concern the women most of all. It would be easier for a woman animator to reach other women in the village. With all their powers of decision making, men are limited to the male world in the closed village society; they have little or no access to women in homes other than their own. Paradoxically, it is the women, confined to their own little corner in the community and leading a secondary existence, who have a free entry into all homes. A network of women, once established, can reach across the barrier to the men too through the family links. A woman animator therefore seemed the ideal person to carry out the complex collection of tasks assigned by the project. Through the years, these women proved to be invaluable assets to SWACH.

The role of the animator was defined variously throughout the project, and no single definition can describe it fully. SWACH animators have worked as health educators; supervisors of handpump maintenance and repair; motivators for planting kitchen gardens utilizing waste water from the handpumps; coordinators for different developmental functionaries working in the village. They have helped promote improved health practice and environmental sanitation; constructed smokeless *chulhas* in three villages; conducted women's awareness camps; tracked down guineaworm cases and informed the SWACH medical teams; and right through it all, kept the line of communication open between the project staff and the people.

Selecting the Right Person

The concept of a social animator was there in the project right from its inception. However, it took a

long time to work out the parameters of the job in a way that would make the animator a credible and acceptable person both to the project staff and to the rural beneficiaries. Among the many hurdles were the following.

- Men in the community did not allow the women to participate in community activities.
- Women were afraid of participating because of the social barriers to women's involvement in these activities.

The real relevance of the need to change attitudes and habits that had lasted for generations was perceived only gradually, and as the project moved forward, the priorities changed. The project attempted to overcome these hurdles through women's awareness campaigns. Camps were organized during the day and in the evenings there were puppet shows, role plays, etc. to communicate the guineaworm message, and, at the same time, raise the consciousness of the women.

Finally, the project took the initiative in early 1988 and began recruiting women as animators. In each block a day-long recruitment camp was held and women came to know about it through an informal network of friends and family members who had been earlier associated with development programmes, or through members of the VCTs, instructors of non-formal and adult education programmes, WDP *sathins*, and NGOs working in the area. Some of them were sent to the camps by the BDO, or the Sarpanch of the village.

The first lot of animators were from the first two project districts: 71 from Banswara and 44 from Dungarpur. A majority of them were between the ages of 18 and 26. In Banswara, more than 60 per cent of the animators belonged to Scheduled Castes and Scheduled Tribes, the weakest sections of society. In Dungarpur, however, 18 of the 44 animators came from higher caste Hindu homes. About half of them had not gone beyond the fifth class, but in Banswara, about 36 per cent had read up to high school.

By June 1988, 21 supervisors had also been appointed. Together, the animators and supervisors were expected to cover about 700 villages — a little over 30 per cent of the villages in the two districts. To begin with, each animator had to visit five to seven villages regularly, with a population of 4000 to 5000. It soon became evident that instead of covering a large area, it was better to concentrate on fewer villages and then move on to a new cluster of villages. A follow-up could be done the next year on the first set of villages. An animator today visits

Bhanwari Bai of Badgaon[1]

Among all the animators of Udaipur district, Bhanwari Bai had the highest score in the test that followed the animators' training programme. She belongs to the brahmin caste and has been working as an animator ever since her training. With six children and a blind husband, she is the only wage earner in her family. She enjoys her work in her cluster of three villages, but it is her own village and her own caste group that have benefitted most from her work. The maximum number of funnel filters have been distributed among the brahmin households and 17 latrines have been built in brahmin areas. Only one latrine was constructed in the area where the tribal community lives. Bhanwari Bai says, it is difficult to convince tribal people about the need to build their own latrines.

In her own village, Badgaon, Bhanwari Bai has achieved a great deal. Soak pits have been dug and are working well. Some of the village women now want to construct soak pits in their own homes. As the handpumps in the village do not have washing platforms or cattle troughs, it is difficult to keep the surroundings clean. For Bhanwari Bai it is a constant battle to keep the handpumps clean and functioning. She feels she has too much to do for too little pay. However, she is keen to continue with the work, not only because it gives her a livelihood, but also because she is aware of the positive impact of the programme. The local auxiliary nurse midwife (ANM), the school teacher and the Sarpanch are all very supportive towards her, as are the brahmin women. The tribals too are aware of her work, even though she does not visit them frequently.

Bhanwari Bai is a typical example of a promising animator who has achieved much, but within a smaller framework than the one delineated for her. Support, guidance, encouragement, and perhaps some additional incentive from SWACH would help increase her effectiveness in the community.

each of her three villages within five kilometres of her home, about six times a month.

By 1992, there were 352 animators in action in four districts of the state, along with 897 scouts and 99 supervisors.

For the Women, a New World

The animators who worked in the project, did so not only because of the monetary incentive, but also because it was a new and stimulating experience which changed their lives. One look at Jamkubai and her colleagues would explain this factor much better than a thousand words.

These animators were young women brought up in a highly patriarchal environment, with a predetermined future of subservience and toil. As girl children, they were perceived as already belonging to another home — the home of their husbands — and as such, bad investments for their fathers. As women, they remained at the back of the queue in the distribution of food, nourishment and health in the family. They worked all day in the house and in the field without any visible remuneration. Their work was not measured in terms of money and hence was considered non-existent. Therefore, they had no right to decision making in any area which was considered important enough by the male members of the community.

As animators, for the first time in their lives, they saw themselves as people with a purpose. They were of use to the entire community and nobody, not even the men, could deny that. They realized that they were doing non-traditional work, and for a salary which, however small it was, meant a great deal to their families. In traditional perceptions, they were doing "a man's job" and doing it with confidence and efficiency. The work also gave them time and space outside their confined existence. It gave them entry into a new world.

This was the final motivating factor — empowerment — that was to play a major role in the recruitment of women handpump mechanics as well.

Kamla Devi of Katumbi[2]

Katumbi is a tribal village with a population of 2500. Situated 20 kilometres away from Peepalkhant, the block headquarters in Banswara, the village has a bus stand and a post office. Kamla Devi, 35 years old, is the animator in charge of this village. She belongs to the Scheduled Caste.

Other than the stepwells and individually owned wells, there are six handpumps in the village. The handpumps have been used more ever since SWACH came to the village four years ago. Even so, there are tribal families who get their water from the wells because the handpumps are too far away from their homes. All the handpumps have cattle troughs and washing platforms and the waste water is diverted to the cultivated fields. The handpumps are kept clean; the surroundings are free of garbage, or insects. The women in the village regularly filter their water and use the washing platform to clean the vessels and wash clothes. There is also a woman handpump mechanic working in the village, so the handpumps are in excellent condition.

The women in the village are aware that filtering the water keeps their families safe from water borne diseases and guineaworm. They also know how the well water gets infected with guineaworm. The children are not allowed to defecate near their homes and if only they had enough money, the villagers would be quite willing to build their own sanitary latrines. The women generally keep their homes clean even though most of them are mud huts with two rooms and hardly any ventilation. They throw garbage, kitchen waste and cowdung in a compost pit located near the fields and house their cattle in a separate shed.

Kamla Devi makes frequent home visits to check on cleanliness and talks to the people about health and sanitation. Sometimes she stands near a handpump and observes how it is being utilized. She organizes street plays and processions, uses songs and discussions to convey her message to the community.

The people in Katumbi are poor and with low or non-existent literacy skills. As tribals, they also belong to a less privileged section of society. But these factors have not worked as deterrents in their willingness to improve their lives. Katumbi is an example of how much a motivated and hardworking animator can achieve in terms of community response to a development programme.

LIST OF COORDINATORS/SCOUTS/ANIMATORS & WOMEN'S GROUPS SWACH PROJECT AREA (JULY 1994 TO JUNE 1995)

Panchayat Samiti (Block)	Supervisor	Coordinator	Scout	Animator	Total
Udaipur	13	44	383	238	678
Dungarpur	5	25	184	105	319
Banswara	9	10	106	50	175
TOTAL	27	79	673	393	1172

Source : SWACH Donor Report, 1994-95

The Scouts

The female animators were assisted in their task of reporting cases by male scouts. Villagers as well as village level functionaries helped the project to identify these young men. Six training courses were organized in 1990-91, where the prospective scouts went through the same sort of intensive drill that had been used for the animators. The training was participatory in nature and had a large audio-visual component. The scouts were taught how to identify the patients and fill in reporting forms. In case the worm was already on its way out through a blister, the men were also taught to bandage the affected limb with medication for swelling and pain. The special bandage came with a plastic backing and served two other purposes — it prevented the discharge of the larvae in case the patient went into a water source; and it identified the person as a guinea worm patient. At the end of the training course, the scouts were given a kit containing bandages, educational material, a register, reporting forms and postcards.

To support and motivate the scouts, the project appointed coordinators selected from the members of local

NGOs and from earlier village contact drives. The coordinators were trained along with the scouts, but they attended additional sessions on supervision and reporting. Each coordinator was responsible for anything between 10 to 30 scouts, whom they would meet regularly in their villages as well as during prearranged fortnightly review meetings.

The scouts supported the animators by visiting the villagers in their homes weekly to check out on old and new guineaworm patients. Their main purpose was to detect patients before they reach the infective stage. They also educated patients about the health hazard associated with their entering open water sources, and escorted patients to the SWACH medical treatment camps.

Surveying the water sources was another regular task for the scouts. They updated the SWACH records and assisted the local health workers in the chemical treatment of unsafe wells. Their reports were discussed along with the cases at the fornightly meetings and the information was shared with the local Primary Health Centres (PHC). A special incentive scheme provided the scouts a payment of Rs 100 in addition to their normal salary, whenever they brought a guineaworm patient to the medical camps at a pre-infective stage. This incentive was increased to Rs. 500 in the last two years of the project (1994-95).

As a support system for the project with special focus on guineaworm, the scouts have performed an invaluable service. The increasing number of patients who were treated before they reached the infective stage bear witness to their labour. The zero incidence of the disease achieved in 1995 bear testimony to the significance of the scouts' contribution. ❑

1 Bhanwari Bai's experience based on "Role of Animators in Promoting Health and Sanitation among Rural and Tribal Women in the SWACH Districts of Udaipur and Banswara," Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1991.

2 Kamla Devi's experience based on "Role of Animators in Promoting Health and Sanitation among Rural and Tribal Women in the SWACH Districts of Udaipur and Banswara," Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1991.

6
Surgical extraction of guineaworm: a solution to many ills

For over a century it has been known that guineaworm is transmitted by cyclops, water fleas that ingest the guineaworm larvae left in it by an emerging worm when a patient immerses the exposed worm in an unprotected water source. The traditional method of drawing out the emerging worm on a stick, when accompanied by bandaging of the lesions, can help to prevent secondary infection as well as contamination of the water sources. But it takes a long time and cannot wipe out the pain, the suffering, the disability or the loss of livelihood.

Modern medical practitioners usually get to see the patients only when the worm has erupted and often after toxic effects have set in as a result of the spilling out of larvae in the subcutaneous tissue. This means that the worm can no longer be extracted safely and has to be left to come out on its own, taking weeks, while the doctor prescribes antibiotic therapy, tetanus toxoid and the use of bandages.

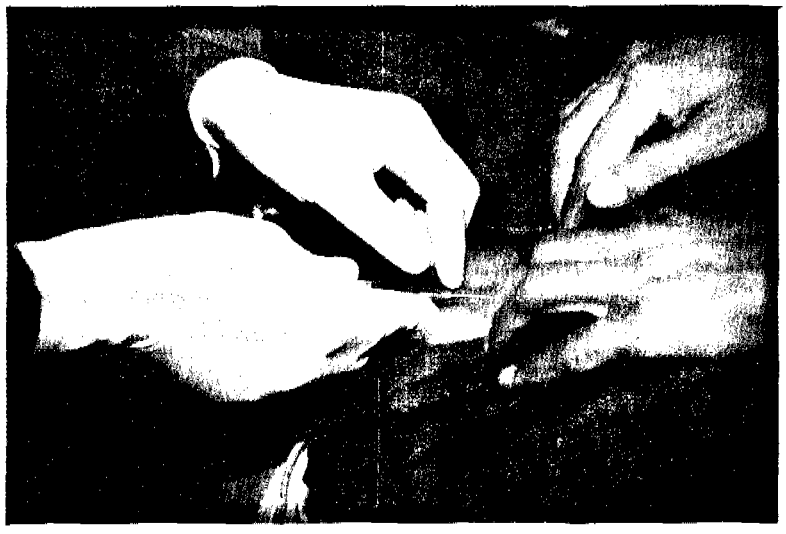
In southern Rajasthan, ayurvedic doctors who form a part of the rural health delivery system, have in the last two decades developed an innovative procedure for extracting the worm surgically, which avoids the hazards of the older method still in use in most parts of the world.

Surgical Extraction and Swift Relief

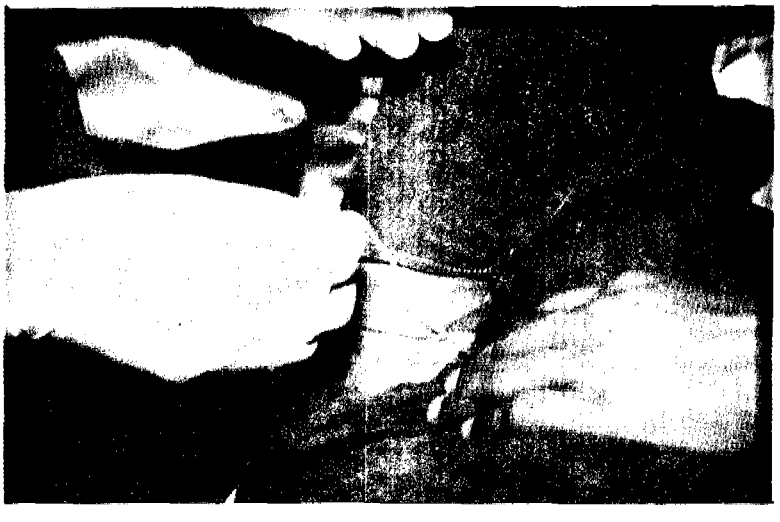
Patients who have had guineaworm before, can very easily make out the presence of a new worm days before it is ready to emerge. They are aware of the worm moving under the skin once it has come up to the subcutaneous region. Also, the position of the worm is actually visible under the skin. By palpating the skin, the surgeon can more clearly identify the course of the worm. After disinfecting the affected area with alcohol, this is how the surgeon will handle the case:

- The mid-portion of the worm is identified and following local anaesthesia with 0.5 ml of procaine, a 1-cm incision is made parallel to the body of the worm.
- The blunt end of a sterile needle is used to withdraw the worm from the subcutaneous area, with a second needle being used to tease away adherent connective tissue, which allows the worm to emerge from the wound and be gently grasped.
- The surgeon applies constant traction, being careful not to disrupt the worm body, and gentle massaging of the area to release the worm from tissue adhesions. This is the most delicate part of the operation because excessive tension could result in disruption of the worm and anaphylaxis or allergic reactions. In contrast to worms that have partially emerged and are surrounded by an inflammatory reaction, at this early stage the worm is readily dislodged from the tissues and with gentle and persistent massaging, it can be completely and painlessly removed.
- In some cases, adhesion to the underlying tissues makes extraction from a single incision impossible. In such a case, a second incision close to the area of adherence may be required to release the intact worm.
- One case in 10 requires actual disruption of the worm, which is done only following careful milking of the entire contents of the body of the worm to avoid any local or systemic reaction to the highly allergenic larvae when the worm is disrupted. The incision is then bandaged and healing occurs within a few days.[1]

The entire surgical process described above generally takes about three to five minutes. It is simple and painless, but can only be undertaken when medical attention is sought prior to eruption of the worm.



THE PROCESS OF SURGICAL EXTRACTION



How Effective is the Procedure? A Sociological Study

This extraction procedure was scrutinized by different teams of experts. In 1990, a study team observed the precedure as applied to more than 800 patients. The patients were treated by a mobile team headed by Dr B.L. Sharma, which served more than 3000 villages in Udaipur district, under the SWACH project. Of these, 161 patients who had presented no more than a single worm, were taken as the basis for measuring disability related to a single worm and the effects of surgical intervention. Symptoms, days of illness and work loss were recorded and patients visited in their homes until they resumed normal activities.

The study found that extractions performed before the appearance of a vesicle meant only three days of work loss and the wound completely healed within nine days. Even after eruption, wherever it was possible to extract the worm using this procedure, disability was substantially reduced in comparison with the traditional methods. The cases where the number of days of work loss exceeded 20 days and healing took six weeks or more, the adhesions had made it impossible to remove the entire worm. But with proper medical care and the draining of the abscess, the patients were safe from the common after effects.

The study found that most patients attending the SWACH medical camps were actually aware of the presence of the worm days before the onset of morbidity or disability associated with the worm's presence. Surgical intervention at the primary stage, when the worm could be removed intact, dramatically reduced morbidity and the number of work days lost. The surgical procedure was more difficult once the worm had emerged and begun to eject its larvae. The inflammation of the area made it nearly impossible to extract the worm completely and without rupturing it. Rupturing of the worm led to release of the larvae and local infection, causing disability that lasted for months.

The study felt that although traditional healers in India had practised similar extraction techniques for a very long time, the lack of local anaesthesia and the absence of sterile techniques at that time made such interventions hazardous for the patients. Modern aseptic techniques, on the other hand, and the use of the simplest surgical instruments under local anaesthesia, not only made the procedure painless, but reduced disability from the usual six to eight weeks to a mere day or two after extraction — the time it takes to heal an ordinary, small cut.

The study identified the most significant results of this procedure as

- A dramatic reduction in both acute and chronic disability associated with guineaworm infection.
- A dramatic increase in both the ease of detecting cases and in presentation at an early stage of the infection.
- A resulting improvement in control and containment procedures, such as isolation of patients and disinfection of open water sources, which break the chain of transmission.
- A reduction in transmission of the disease as a result of the extraction of the worm before it has the opportunity to release its larvae into the environment. [2]

The findings of the study emphasized the need for intensive health education and large-scale communication efforts in the attempt to eradicate guineaworm disease. To be most effective in healing and controlling the disease, the surgical extraction procedure must rely on the people's willing participation in the effort to eradicate guineaworm. This implies that the people must first have the required information which would motivate them to report the cases at an early stage. A significant role was played by the social animators and health educators in this context. Demonstrations of the positive results of this method of extracting the worm also would have a direct effect on the community.

Solely from a Medical Point of View

A second major study that evaluated the surgical extraction procedure was conducted by a team whose concerns were addressed directly to the medical efficacy of the procedure and its long term acceptability within the medical profession. A four-member team of experts from the All India Institute of Medical Services (AIIMS) in Delhi visited Udaipur in July 1991 with the objective of evaluating at first hand the surgical extraction of guineaworm as it was

being carried out by the SWACH medical teams. The evaluation was to be based on the feedback the team received on specific areas of interest:

- Safety of the surgical procedure and its secondary infection rate and potential.
- Efficacy of the procedure as measured by the success rate in removing the entire worm.
- Benefits to the patient in terms of reduced morbidity and enhanced recovery in contrast to the conventional management of the condition.
- Acceptability of the procedure for the patient and its potential for meeting the felt needs of the population.
- The likely impact on the eradication programme.

Although the short visit did not allow for a systematic, in-depth, statistically valid study, it did allow the members of the team to see the medical teams in action and judge for themselves the impact of the surgical extraction procedure on the individual and the community. The team met the fieldworkers and officers and were given a clear idea of the objectives, methodology and activities of the SWACH project before witnessing patients being operated on for guineaworm. They also examined earlier patients who had already undergone surgical intervention for guineaworm, listened to the views of over a hundred past patients and members of affected villages, and scrutinized many converted stepwells and handpumps in the area.

On the last day of their stay, the AIIMS team visited a referral hospital and talked to four doctors there, to get an idea of the professional attitude towards this procedure. Three of them had never removed a guineaworm and did not think it was necessary to do so. All three believed in a "wait and watch" policy until the worm erupted, after which they would treat the wound as any other abscess. Interestingly, in support of their beliefs, the doctors pointed out that none of the accepted textbooks advocated surgical removal of the worm before it emerged from the skin. The fourth doctor, however, claimed to have surgically removed guineaworms a number of times earlier in his career and was aware of the lack of risk involved and the considerable advantages of removing the worm before it broke the skin.

The AIIMS team's recommendations began with enthusiastic support for the procedure:

> **The surgical removal of Guineaworms, *especially those in the first stage* (that is before the worm has erupted) should be the method of choice for the management of Guinea worm disease.... There is no other form of treatment that gives any comparable degree of relief to the patient.**

The team made detailed recommendations. Some of them pointed out organizational weaknesses such as lack of adequate collaboration between the government's health services and the SWACH teams. Others referred to training needs, or even improvements in wound management techniques. A random selection of the recommendations would help to identify possible obstructions in similar projects in diverse environments.

- The system of merely bandaging the cases where the blister has formed should be modified to the application of a dressing pad followed by the application of a broad, waterproof surgical tape, to completely seal off the worm from the exterior. A simple cloth bandage will let the larvae escape into the water.
- The surgical technique should be slightly modified so that the wound is closed with a butterfly shaped adhesive plaster applied so as to keep the cut edges in apposition whenever the incision tends to gape, because of its position on the body, or when it is longer than about 0.5 cm.
- If the technique of surgical extraction is to be considered the treatment of choice for the pre-emergent stage, the number of people trained in the technique will have to be greatly increased.
- Training material should be produced for this purpose, including audio-visual material, which would visually clarify the process.
- Publicity should be given to the procedure so that more people are informed about its acceptability in the community as well as within the medical profession.
- Protected and converted wells should be sign-posted. Once the people come to associate the sign with safe drinking water, they will drink only from sign-posted wells.[3]

In reponse to the recommendations of the AIIMS team of medical experts, SWACH has prepared detailed guidelines and video teaching modules for guineaworm eradication efforts within the SWACH districts as well as elsewhere.

For SWACH, the visible benefits of the surgical extraction procedure contributed significantly towards building a relationship with the community. This was important for a project which had long-term goals that went far beyond immediate gains.

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1 "Surgical Extraction of Guinea Worm: Disability Reduction and Contribution to Disease Control," Jon E. Rhode et al, *American Journal of Tropical Medicine and Hygiene,* 48 (1), 1993, pp. 71–74.

2 "Surgical Extraction of Guinea Worm: Disability Reduction and Contribution to Disease Control," Jon E. Rhode et al, *American Journal of Tropical Medicine and Hygiene,* 48 (1), 1993.

3 AIIMS Report on the Surgical Extraction of Guinea Worm in the Swach District of Udaipur, 1991.

7
Installing the hardware

The Plan of Action had recommended that the civil engineering activity of the project should be entrusted to the Gram Panchayats, who had the capability of independently undertaking the conversion of stepwells, while the project provided the funds and supplies. The villagers were familiar with the skills required to build wells and all that was really needed was for the project to be able to supervise and guide them in the work.

But these were early days and the motivating impact on the community of the network of animators and scouts had not yet gained adequate strength. In addition, with the proposed Panchayat elections in the offing, it was difficult to arouse enough interest among local opinion leaders in the conversion process within such a short time. Finally, it was decided that the project should begin the work with its own staff.

CONVERTING STEPWELLS

The conversion of stepwells could only begin by mid-October 1986, after the first village contact drive had been completed and the water in the wells had receded sufficiently after the monsoon. Between October 1986 and June 1987, 1912 out of the targetted 2200 stepwells were converted to draw wells.

No standard design was used in converting the stepwells, but care had to be taken to tailor the design to the specific requirements of the well. Once the steps were closed, a parapet was built around the well and pulleys fitted for the drawing of water with a rope and bucket, thus eliminating all possibilities of direct physical contact with the water of the well. In some cases, the wells were fitted with handpumps.

Conversion of the stepwells was one of the highest priority operations in the first year of the project. SWACH workers knew that by closing the stepwells, they would immediately cut off any further transmission of guineaworm disease. The next stages would be chemical treatment of the water of the wells with temephos 50 per cent EC to kill the cyclops, and inculcating the habit of filtering water for drinking purposes at home as long-term preventive measures.

Although the conversion work was eventually undertaken by SWACH, the workers made consistent efforts to retain the community's interest in the project. To this end, the wells for conversion were first identified by VCTs whose members belonged to the local community. Subsequently, junior engineers employed by the project were consulted for feasibility. The need to identify these wells arose out of the fact that many more wells existed in the region than what the project could reasonably deal with in this initial phase. It was decided to rank the wells on a scale of

priority, and to convert only those wells which were identified as actual or potential sources for guineaworm disease.

The pace of the work picked up after some initial slowing down resulting from organizational snags in the second quarter of 1987. At the beginning of the project, 2700 wells were targeted for conversion in Banswara and Dungarpur and 3200 in Udaipur and Rajsamand. By 1993, the wells actually converted numbered 4188 in Banswara and Dungarpur — 155.11 per cent of the target — and 4993 in the other two districts — 156.03 per cent of the target. By 1995, 9495 wells were converted in the whole project area.

Number of Stepwells Converted up to June 1995

Period	Banswara/ Dungarpur	Udaipur	Total
1986–1987	1912	0	1912
1987–1988	957	1063	2020
1988–1989	163	1636	1799
1989–1990	133	725	858
1990–1991	374	535	909
1991–1992	325	423	748
1992–1993	324	611	935
1993-1994	-	-	223
1994-1995	-	-	91
Total	4188	4993	9495

Source: SWACH Progress Report, UNICEF, 1993, 1994, 1995.

The original or model-estimate expenditure for the work was Rs 5500 (US $ 176) per well converted in 1986-87, and Rs 6000 (US $ 192) in 1987-88. By the end of June 1988, the annual actual average cost per well was down to Rs 3954 (US $ 127).

Conversion of stepwells and their maintenance were ongoing activities of the project. Prioritization of the wells according to their primary use was necessary only because the project did not have the kind of resources needed to convert each and every well in the area. This implied that wells which were totally or mostly used for drinking water were the first to be converted.

Innumerable wells are used for irrigation purposes in this part of the state. These were not earmarked for conversion, even though thirsty farmers did drink from them during working hours. The assumption here was that the likelihood of contamination was immensely aggravated in wells that were used primarily for domestic purposes. Converting them would swiftly control the spread of the disease and lead to its eradication; while, in the absence of any positive indication of contamination, the wells used for irrigation could be left unprotected without endangering the community.

Guidelines were set up for every stage of the programme.

Stage One: Identifying Villages with the Greatest Need

With guineaworm eradication a major objective of the programme, it was decided that priority would be given to those villages which reported the largest number of guineaworm cases. Information about these villages came through village contact drives, house visits of animators and the medical searches undertaken by the National Guineaworm Eradication Programme. Any seriously conflicting information among these three sources was to be checked up directly by the project staff.

It was also decided that the villages thus identified could not be taken up entirely in isolation of their neighbours. It was felt necessary to adopt a "cluster" approach to ensure swift control over the disease. Working not just in a single village, but in a group of villages implied a certain economy of scale: it saved on staff resources and made for more efficient transport of material required for infrastructural change.

Stage Two: Identifying Stepwells for Conversion

Once a village and a cluster were identified, the junior engineers were supposed to take on the task of making a comprehensive list of all the wells to be converted within the cluster. In the process of identifying the wells, it was also possible to mark out wells which needed to be provided with a handpump. The requirement for such handpumps was passed on to the Project Director who would immediately initiate the process of procuring the necessary equipment.

Before sanctioning the conversions however, the Project Officer and

the Assistant Project Officer (Technical) were expected to visit at least 30 per cent of the listed stepwells. Such a random check would ensure that the wells conformed to the project criteria. For example, wells that were used solely for irrigation were not to be converted. Only those wells which appeared to have a direct connection with the spread of guineaworm disease would qualify for change. But among such wells, the ones that provided drinking water to the largest numbers would be the first to be taken up for conversion.

The verification effort also included the assessment of all other drinking water sources in the cluster, so that future planning could take into account the need for new water sources, the requirement for repair and maintenance of existing ones and the execution of sanitary interventions, as well as work out efficient drilling and rig movement routines.

Stage Three: Interacting with Individuals and the Community

There was one self-imposed rule which was strictly followed right through the project. No stepwell was converted to a draw well without the consent of the community or the individual owner, even when government regulations protected the decisions of the project staff. This meant that the project staff might from time to time have to spend extra hours in attempting to educate and convince the people concerned, before any change could be instigated. Where persuasion did not prove easy, the Project Director and the District Project Implementation Committee were called upon to intervene.

On the other hand, there could also be occasions when the project staff were pressurized by the community to convert a stepwell that did not meet the priority criteria. The project staff, and when required, the Project Director, were then expected to carefully explain the position of the project and convince the people about the validity of their stand.

All such communication with the beneficiaries of the project were carried out in the form of a dialogue, a sharing of knowledge and information about health and sanitation, a gentle breaking down of any resistance. The assumption was that more often than not the villagers had perfectly good reasons for their objections, or they had valid questions that needed to be answered satisfactorily before they could accept the change.

The project staff were urged to explain the project in detail to the villagers, clearly stating the long-term goals and the holistic approach. At the same time they were exhorted not to make unrealistic promises about when or to what extent utilities could be provided.

Conversion of private stepwells demanded that the owner make a formal request to the project and fill up and sign a form which stated the number of people using the well and the number of people affected by guineaworm disease after drinking the well water.

Stage Four: Drawing up Estimates and Designing Models

Stepwells that needed to be converted were not all of the same size or type. Taking into account some basic characteristics of the stepwells in the area, a few model designs were prepared. These would serve as general guidelines to the staff in making the necessary changes for conversion, as well as provide a basis for estimating the resulting expenditure. However, as the wells could not be transformed in any standardized manner, the junior engineers were expected to treat each well as a unique case and evolve the most suitable and economic design for that particular well. While evolving the design, a junior engineer was supposed to ensure the cooperation of the local people, as that was the only way the design could genuinely fulfil the felt needs of the people. Also, consulting with the community was a way of bestowing a sense of responsibility on the community for the upkeep of the converted well.

The final design and estimate for converting a well took into account the following considerations:

- The conversion must be so designed as to totally prevent any human contact with the water.
- A parapet should be raised around the well so that children were not endangered.
- The edge of the parapet should slope outwards so that it would not be used as a washing platform and no waste water would drip into the well.
- The well should preferably be dewatered so that it could be cleaned properly.
- All plants in and around the well should be removed and all gaps and holes in the walls

plastered above seepage level, to avoid future pollution.

- The mud at the bottom of the well should be removed as it usually (contained) cyclops especially during the cold season when the conversions were scheduled.
- Draw wells used by less than 20 households were to be given a single pulley.
- In only a limited number of cases, mostly where wells were in public places and used by more than a single community, handpumps would be attached to the wells to increase public access to the available water.
- When a well was used for both irrigation and drinking water, the conversion of the well should take into account the possible use of a pumpset. Otherwise, the owner might have to tear down or damage a section of the parapet to have the pumpset functioning.
- For the purposes of record keeping, the converted well should be marked clearly with a plaque stating the year and month of conversion and giving an identi-fication number.

Stage Five: Planning and Reviewing the Work

Targets set up at the beginning of the year only applied in so far as they formed a framework within which to evolve the short term plans. It was considered easiest to stick to a monthly schedule for immediate work plans, reviews and accounting. Reviews of the hardware inputs were to be based on the monthly progress reports prepared by the junior engineers.

A major concern in this activity was the coordination of the two fundamental aspects of the SWACH project — the hardware interventions and the "software" activities like the training of grassroots workers, health education and community involvement.

Stage Six: Procuring and Distributing Material Needed for Conversion

It was decided that based on the target set for the year, the procurement of materials would begin while the estimates were still being prepared for each well in a cluster. The annual target would provide a broad pattern of requirement for materials such as cement, sand and stone, handpumps or pulleys.

Arrangement for the purchase and transport of such items would have to be made before the final expenditure could be ascertained, simply because waiting for the estimate of each well meant a long gap between planning and execution—defeating the purpose of the project. The longer the wells were left unattended, the greater would be the number of people suffering from guineaworm disease. Also, multiple sources for the required material would mean less bottlenecks.

During the monitoring meetings at the beginning of every month, assessment was made of the requirements of each junior engineer, following which the material was sent to the actual construction site of the local centralized store maintained by the junior engineer.

Stage Seven: A Hands-on Job

The construction work was to follow a seasonal pattern, dependent on the availability of labourers and the height of the water table in the well. Right after the monsoons, the water table was too high for work to be carried out effectively. In the winter, which would otherwise be the ideal time of the year for converting the wells, dewatering of the wells might interfere with irrigation. However,

the period when the maximum transmission of guineaworm disease took place every year, was between April and June, and the conversion of the wells would thus have to be completed before the summer set in.

The construction work had three stages — dismantling, earth work and masonry — and in making the estimates the junior engineers had to depend on the basic scheduled rates acceptable to the state government. There would be occasion to exceed these limits and in those cases, the estimate needed a special approval of the Project Director.

Once the construction was over, the converted well was left unutilized for at least a week to allow time for the new wall and parapet, the frame and the pulley to become part of the old well. Guarding the well against misuse during this time could very well be a task for the community to take up together. At the same time, to ensure that the conversion of the wells had been undertaken systematically and efficiently, a routine inspection schedule was developed for the senior project staff.

HANDPUMPS FOR SAFE WATER

Handpumps have indeed reversed the curve of suffering in the villages of Rajasthan. They have brought safe drinking water in dry, rocky terrain, to villages far away from the state's health services, and reduced morbidity from water borne diseases that affect large sections of the population, most of whom are children. In the districts

of Udaipur, Rajsamand, Dungarpur and Banswara, the handpump is helping specifically to eradicate the dreaded guineaworm.

A Community Decision and a New Methodology

Two major problems were associated with official intervention in this area:

- The selection of the previous sites was not always based on maximum accessibility.
- An effective system for routine maintenance and repair had never been put in place.

As a result, many of the working handpumps were monopolized by a small number of people or were situated in so public a place that the village women would not go to them. When the handpumps developed problems, they were abandoned by the people, either because no one took responsibility for maintaining a handpump, or because it was a complicated and long drawn out process to get a mechanic through the official channels to repair the handpump.

The SWACH intervention intended to change this scenario forever. The communication and motivational input of the project laid particular emphasis on the people's own responsibility in improving the health and life of the community. Integrated into this effort was an additional impetus to bring the women forward and help to give them a voice.

In the tradition-bound society of Rajasthan, women have played particularly submissive roles for generations. This is not to say that in the villages of southern Rajasthan women are always hidden from the public eye. However, their jurisdiction is so limited that their marginalization in their own community has been far greater than in many other parts of the country. Yet, it is the women who collect and distribute water in the household and it is they who tend the sick. The project's perception was that it would be merely logical to involve the women in decision making in the installation of handpumps. If in the process the women gain a sense of self-worth

and learn to assert their rights, the community can only benefit from their achievements.

To make sure that the villagers were not only aware but also involved in the activity, SWACH workers established an appropriate set of procedures. The sites for handpump installation were chosen by the villagers, primarily the women who were asked to express their priorities during village contact drives. Every site was thereafter checked by the project staff to ensure they fulfilled social, environmental, technical and hydrogeological requirements. Today this methodology has percolated to the government department PHED, which applies it to drilling operations, wherever possible, in other parts of the state.

The failure rate has been low within the project, primarily because of the careful assessment of drilling sites. SWACH hydrogeologists identified drilling sites with the help of hydrogeological maps provided by the government of Rajasthan and Wadi Terrameters,[1] which improved the success rate of the drillings effort from 85 per cent to 91 per cent.

Stage One: Selecting the Village

The hydrogeologist was to make an invaluable contribution to the selection of the drilling site. But before that, a rough and ready needs assessment had to be undertaken. The criteria were

- There should be one handpump to 200 people in a compact habitation.
- Hamlets with a population of 100 and above who have no handpump, should be provided with one.
- In hamlets with less than 100 population, the stepwells should be converted, but handpumps may be installed if there were no stepwells.
- Wherever handpumps reportedly produce bad quality water, a handpump may be fitted to an available stepwell rather than drill a new borehole.

For villages with a higher incidence of guineaworm, villages with scattered dwellings, or where the spatial distribution of the handpumps was particularly inefficient, it was decided to have more handpumps than required by the general criteria.

Stage Two: Identifying the Site for Drilling

Site selection began in an area with the lowest density of handpumps and a high guineaworm infestation. The selection was planned in such a way as to allow for easy movement of the rig from one site to another. All the sites in a single village, for example, would have to be decided upon at the same time, so that the rig would not have to return to the village again and again. Areas known to have high failure rates would require thorough hydrogeological investigation Wadi Terrameters would be used in such areas, along with maps showing lineaments.

A simultaneous activity was the village contact drive run by a team of local people trained for the purpose. Through its continued efforts to disseminate the guineaworm message, the VCTs gathered information on a variety of activities and problems associated with health and environmental sanitation. The requirement of handpumps emerged from this interaction at the village level, particularly with women.

A few additional points to remember in choosing the site for a handpump were

- The users, especially the women, should approve of the proposed location of the handpump.

- There should be sufficient indication that drilling will yield an acceptable water supply.
- The site should be at least 30 metres away from any sanitary disposal facility.
- A good drainage facility should be available so that there is no water-logging near the handpump.
- All local residents should have free access to the handpump.
- The selected site should not belong to a private owner.

Stage Three: Planning the Drilling of Boreholes

Keeping these considerations in mind, the guidelines for this part of the work began with the drilling of boreholes. The two major concerns were

- Selection of a suitable site.
- Adoption of minimum criteria for the quality of drilling.

It was already evident that although the project area had one handpump for less than 250 people, the ratio was much worse if accessibility was taken into account. A major proportion of water related diseases in the area appeared to be concentrated in localities where the handpumps were too far away and there was no safe source for drinking water. The project wanted to effectively combat such a condition, but it also needed to be aware of the physical constraints of the specific geographical area.

To this end, planning the installation of handpumps involved keeping in mind

- Sites which were difficult to reach.
- Sites which had collapsible formations.
- Sites where the ground water was uncertain and experience showed a more than 15 per cent failure rate in the past.

The procedure followed to remind the planners and engineers of the need for special strategies was to mark out areas with these problems on a map.

Stage Four: Planning the Movement of Rigs

In the SWACH districts, the drilling was undertaken by the PHED of the Rajasthan government, the same people who have been doing the job for many years. What made a difference was the contribution of SWACH in selecting the site and regulating the drilling. It cut down on unnecessary expenditure and time in many ways. The government agency knew its job well, but being a large scale operation, it did not have the capacity to go into as much detail as SWACH could in the limited area under its supervision. As a result, duplication of effort in the same area did not take place and with efficient site management, optimum use could be made of the handpumps that were installed.

The Project Officers and the Project Director were responsible for seeing that a fair assessment was made of the site from both the technological and the community point of view. A system was worked out by which PHED and SWACH could simultaneously evaluate the information received on the selected sites.

Planning efficient rig movement was a major achievement, and both PHED and SWACH were involved in it. The rigs were assigned in a way that would suit the hydrogeological conditions of the area, and be available for drilling all bores in a single cluster of villages at one go. Once the rig movement plan was prepared, it was shared among the Project Officer concerned, the Assistant Engineer (drilling) and the Project Director at the start of every quarter.

Stage Five: Drilling the Boreholes

The drilling team not only ensured

that they had reached the selected site, but also they make available water samples to a chemical and bacteriological laboratory for testing. Salinity, foul odour and brackish taste would mean the effort was a failure.

The drilling crew also had a social role to play. In every village, a crowd would gather whenever the crew arrived. This was an excellent opportunity to pass on some of the information that motivated the drilling effort. The drilling crew was therefore trained and provided with suitable communication material to talk to the people informally on water, health, hygiene and sanitation.

A casing pipe of minimum six metres in length, properly sealed against percolation, was provided with the borewell. On the basis of the hydrogeological studies, it was decided that a minimum drilling depth of 50 metres was required for Dungarpur and Banswara and 60 metres for Udaipur and Rajsamand, To get a yield of 720 litres per hour in all four districts.

In areas with hard rock formations, where there was a possibility of striking water at much lower levels, a depth of 70 metres was recommended. Collapsible formations make drilling beyond a certain depth impossible. In such areas, after at least 30 metres, the yield rate was to be the criterion. When drilling with equipment such as the ODEX-165, the minimum depth was to be 50 metres even with collapsible formations. In all cases the water column was to be at least 25 metres.

On the first week of every month, a report was made on the success and failure of the boreholes drilled during the previous month. This included drilling depth, water yield and quality assessment of the water.

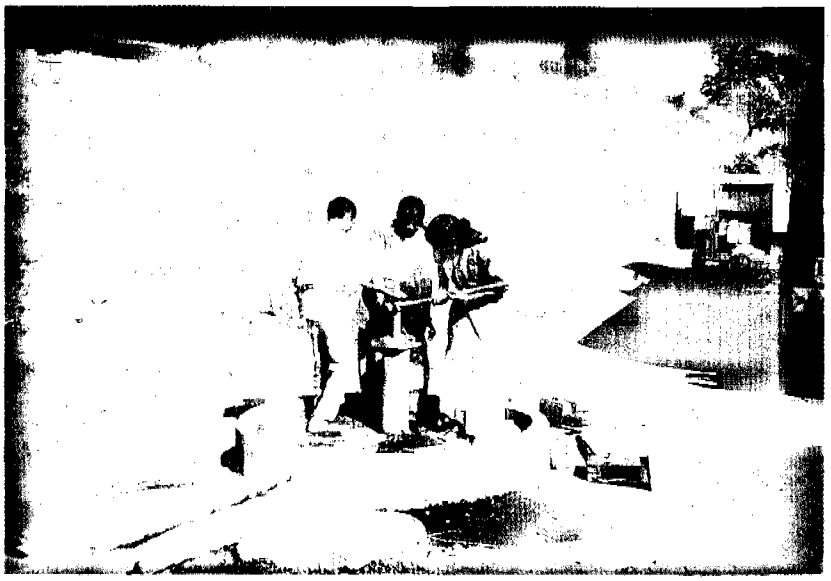
Stage Six: Installing the Handpump

Although the drilling work was undertaken by PHED, a government entity, SWACH relied on outside contractors for handpump installation, for reasons of logistics that may not be significant for similar work being done in other countries. Essentially, it eased the time gap between the drilling and the installation of handpumps. However, along with the project staff, the PHED personnel too were expected to be directly involved in ensuring the quality of work put in by the outside agencies. The guiding document followed was UNICEF's Manual on the India Mark II Handpump Installation and Maintenance."

To minimize the time gap between drilling and installation, a set of directives were worked out.

- The installation process should start within 30 days of drilling the borehole.
- To keep to this deadline, the contractors were to be supplied in advance with material required to construct the platform and the pedestal.
- Other material, such as pipes and cylinder assembly could reach the contractors when the platform and the pedestal had been built, as these would be required some days after the construction work was completed. A minimum of one week's time is required as "curing" time between the construction of a platform and the actual installation of the handpump.
- The contractors should be given a copy of the rig movement plan to help them plan their own movements.
- Ideally, the contractor should provide a number of installation teams to speed up the work.

The project targets were 4300 handpumps in Banswara and Dungarpur and 4000 in Udaipur. By June 1993, 99.14 per cent of the targeted number of handpumps had been installed in Banswara and



Dungarpur, while in Udaipur the percentage was 90.17. By 1995, 8660 handpumps were installed in the entire project area- 104% of the target. Improved drainage facilities were provided for 5539 handpumps in Banswara and Dungarpur, representing 97 per cent of the target. In Udaipur, the corresponding figures were 10,088 and 112 per cent. The numbers include handpumps which already existed in the area, before the SWACH project began operating.

Social animators and health educators took over once the handpump was ready for use. At this stage, it was important to demonstrate to the community the best way to utilize the handpump so that repair and maintenance needs could be minimized.

A Special Feature: Handpump Amenities for Environmental Sanitation

The SWACH designed the handpump amenities with certain additional features for optimum use of water and sanitation purposes. Just a handpump platform with an outlet for waste water can very easily create a swamp at the nearest point where the water settles outside the platform. This subsequently becomes a major health hazard for breeding mosquitoes and other insects and contaminating the ground water.

To circumvent the problem, a washing platform and a cattle water trough were designed for construction at a distance from the handpump platform. The cattle trough filled up with waste water from the handpump platform connected through a small size draw, provides drinking water for cattle. The washing platform is separated from the handpump platform and is utilized for cleaning utensils and clothes, thus checking spilling of water around handpump platform and keeping the surrounding clean.

As the rural population hardly ever use soaps with chemicals for their washing purposes, the water released from the washing platform is safe for use in kitchen gardens. Animators and health workers in the SWACH project, therefore, encouraged the villagers to use this waste water for kitchen gardens or small plantations. Wherever possible, a drain was built to channel the waste water to a patch of green. At the side of the washing platform, a cattle trough was added where required, once again linked to the handpump platform.

Problems in Site Selection

In areas of water scarcity combined with poverty and lack of easy access to development services, handpumps are generally perceived as sources of power. In the past, many such installations were made at sites which were out of reach to the rural poor, for social, cultural or even sheer physical reasons such as distance. Sometimes, people in positions of power would even appropriate a handpump and claim it as their personal property. As a result, handpumps were often installed in private places, rather than in a central and easily accessible spot in residential areas.

The SWACH strategy was to involve everybody in the village — the influential leadership as well as the less articulate common members of the community, especially the women. During the village contact drives, special effort was made to consult women for the selection of handpump sites.

The first campaign started in Dungarpur and Banswara on 16th and 17th September 1986. Nearly 100 VCTs covered 1023 villages in the two districts. In the second campaign organized between 25th April and 10th May 1987, 188 teams went to 1962 villages, covering almost the entire project area.

There was occasionally some unspoken conflict between what the VCT recommended and what the hydrogeologist would finally accept. But whenever the hydrogeologist was a person more sensitive to the project's aims and felt motivated by them, the cooperation between the people and the technical staff was evident in the final choice of the site and the execution of the installation work. For example, in one village which nestled in a hollow on the hillside, the villagers built a temporary mudbank and road right across their cultivated fields — a massive activity— just to get the drilling rig to the interior of the village.

Project monitoring efforts often identified the remoteness and roughness of the terrain as the reasons behind a rig's failure to successfully drill a borehole. But it is possible that on some of these occasions, it was really a failure of communication between the implementers of the project and the beneficiaries themselves.[2]

Not all technical staff were able to

establish an atmosphere of mutual respect in the villages where they worked. Sometimes it was difficult for them to accept that a poor rural population, deprived of the advantages of urban middle-class education and upbringing, could possibly know, where they wanted their water source better; that having dug their own wells for generations, rural people could have developed their own indigenous methods for even testing the soil.

Repairing and Maintaining the Handpumps

Information collected during the first village contact drives in the project areas had revealed that nearly one-fifth of the handpumps in these districts were out of order and had been in that state for some time. The factors that contributed to this situation were

- Lack of information about the procedure to be followed for an officially appointed mechanic to visit a pump.
- Complexity of the procedure.
- Lack of community incentive and responsibility about a public utility.

Target oriented projects have always relied on their mounting list of numbers, but more often than not neglected the post installation monitoring, maintenance and repair, without which no technical intervention can possibly have a long-term impact.

In the days before SWACH, when a handpump broke down, the villagers would inform their Panchayat member, who would inform the Sarpanch at the time of the next Panchayat meeting. The Sarpanch would, then, let the handpump mechanic know about the problem.

Number of Handpumps Installed up to June 1995

Period	Banswara/ Dungarpur	Udaipur	Total
1986–1987	587	0	587
1987–1988	1065	36	1101
1988–1989	851	516	1367
1989–1990	1036	600	1636
1990–1991	430	1391	1821
1991–1992	230	932	1162
1992–1993	64	132	196
1993-1994			362
1994-1995			428
Total	4263	3607	8660

Source: SWACH Progress Report, Unicef, 1993, 1994-1995.

The mechanics were members of the community identified and trained by the Panchayat Samiti. Each mechanic was supposed to look after 40 handpumps, but only undertook minor repairs, while the major repairs were handled by the PHED.

The mechanics were supposed to be paid Rs 11 (US $ 0.35) per month per handpump, and Rs 65 (US $ 2.08) per year per handpump were kept aside for the spare parts.[3] They were supposed to buy their own spare parts and the payment was sanctioned only after the Sarpanch certified that a pump had been actually repaired.

This was an enormously complicated procedure for a job that needed to be accomplished quickly. After all, the handpumps were not only controlling water scarcity in the region, but also working as preventive mechanisms for water borne diseases.

For the SWACH project therefore, the establishment and continuance of a well-functioning maintenance system were two of the biggest challenges in the handpump installation programme.

Training for Handpump Mechanics

To begin with, SWACH workers planned to identify new mechanics and simultaneously upgrade the skills of the existing ones. But by August 1988, only 49 new mechanics and 70 of the existing 140 mechanics had been trained by SWACH in maintaining and repairing handpumps. It was a slow and problematic process. The process followed was:

Stage One: Selecting the Right Mechanic

Selection was done on the basis of the following criteria.

- The person should not have any seasonal activity such as agricultural work, as this would hamper repair and maintenance work during the peak seasons.
- Preference will be given to persons with knowledge of carpentry, blacksmithy and repair of other simple machines.
- The person should be educated up to at least class VII and know bicycling.
- The person should belong to the same area where the maintenance and repair work is required.
- The necessary tools should be bought from personal funds or through a bank loan of up to Rs 4000 (US $ 128).
- The number of mechanics selected should be in proportion to the number of handpumps likely to be installed in the given year, and the number to be allotted to each mechanic.

Stage Two: Training the Mechanics

Once the recruitment was completed, the persons were to be trained at a technical institute for six months, of which three months would be devoted to field training. In the case of SWACH, the training was to take place in the Industrial Technical Institute (ITI) available in the project area. A stipend of Rs 150 (US $ 4.80) per month was to be paid to the trainees. The project would also pay an honorarium to the staff and the cost of materials for the training.

Stage Three: Preparing for the Job

The areas and number of pumps to be allotted to each recruit were to be decided upon while the training was in progress. There were other concerns such as guiding the mechanics in procuring loans for their tools as quickly as possible and overseeing the quality of the tools bought. A list was prepared of approved suppliers of tools as specified in the UNICEF manual for the India Mark II handpump.

It was hoped that the Panchayat Samitis — the Block level administrative units — would make bulk purchases of the required spare parts in consultation with PHED, so that they were of a standard quality. A realistic estimate of the spare parts requirements for the year could emerge from the reports of existing mechanics.

A one-month refresher training course was also on the schedule at the ITI for the existing mechanics. An already developed syllabus was to be adopted with minor changes, primarily to train the mechanics in the software component of the programme.

While evolving the guidelines, it was felt that a basic problem with repair and maintenence was that maintenance was invariably neglected as it was equated with repair. Being a mechanical device, a handpump requires routine maintenance for optimal performance. This necessitated the creation of a system of scheduled maintenance which would also include periodic replacement of some parts, such as the leather bucket, which was found to be the most vulnerable part of the pump. To this end, a time schedule was to be worked out indicating the dates when a mechanic should visit a pump.[4]

Hira, an animator from Kutumbi village in Banswara said, "I asked my father, 'Aren't we used to hard manual labour, working in the fields and carrying two or three heavy pitchers of water for miles everyday? Don't we suffer most when the handpump breaks down?' He softened, but was still reluctant. So I persuaded him: 'Let me go for the training at least. If it is too difficult, I'll give it up.' He relented and said I could go for training and then he would see!"

It was difficult to break into a system that had been in place for a long time despite its inherent inefficiencies. The effort interfered with the discretionary powers exercised by the Sarpanch in matters of recruiting mechanics. By attempting to increase the number of mechanics, the project was actually reducing the number of handpumps per mechanic and making the job less attractive. The project also tried to initiate scheduled preventive maintenance, such as changing the washer and greasing the joints at regular intervals: this was perceived as unnecessary and extra labour, something the mechanics were not happy to take on. The concept of preventive maintenance was quite alien to the community.[5]

Women as Handpump Mechanics: a Revolutionary Idea

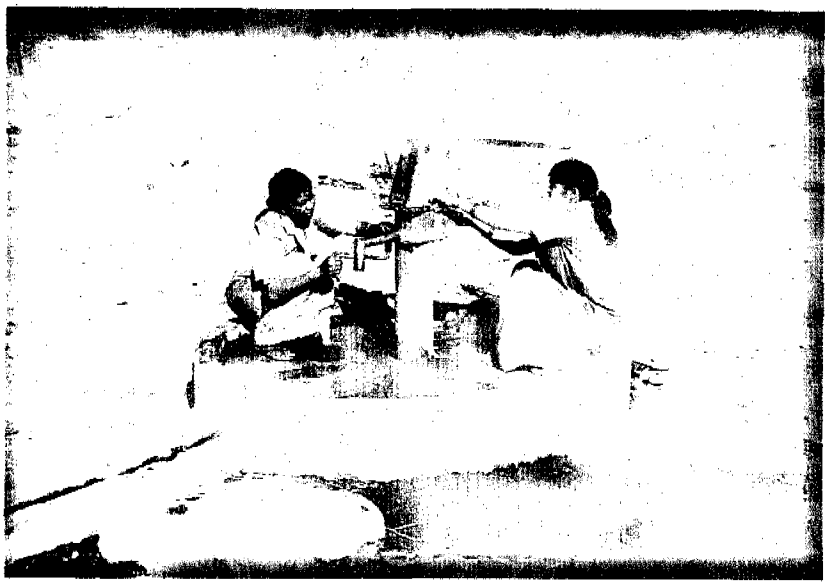
The idea of women handpump mechanics was initiated in one of the animators' training sessions in 1988. Local women were already being trained by SWACH as animators and participating in village contact drives and other activities which promoted health awareness and environmental sanitation. More than half of the animators displayed interest in getting trained in handpump maintenance. But when they went to talk it over with the men in their families, the idea was immediately rejected. Repairing handpumps was a man's job, they said; it was hard manual labour. How could women handle hammers and heavy metal pipes? But the women persevered.

After discussions with existing male mechanics, animators and trainers from the Institute of Industrial Training, it was decided that the women mechanics would be working in teams of three. This would make them feel secure when travelling to other villages; it would reassure their families about their safety; it would make it easier to carry the heavy tool kit, or take out and lower the assembly at the site. The team of three women was expected to maintain the same number of handpumps maintained by a single male mechanic. An intensive fortnight-long residential training course was planned, to be followed by two and a half months of supervision and practical fieldwork near their homes.

The training course started on 22 December 1988. Innovative games, exercises and audio-visual material were used to make the training interesting and memorable. Subsequently, during field training, women mechanics opened up 30 pumps, took out the riser pipes, cleaned and greased the parts, changed the washers and any other damaged parts. They recorded the information about the depth of each pump, the number of riser pipes, the height of the water table and conditions of the parts inside the pump. The information was used for preparing an effective maintenance plan for the handpumps.

After the three months of training were over, each group received tool kits and their formal contracts from their Panchayat Samitis for the maintenance of 30 to 40 handpumps in their area. Initially the new mechanics were teased by the men, but it soon stopped when the men realized that these women were both capable and efficient and had actually learnt more than many of the earlier male mechanics.

In 1989, 24 women handpump mechanics were trained in the districts of Dungarpur and Banswara. The next year, 24 more women were trained in Udaipur and began working as mechanics with the Rural Development Department. The logic behind this move was that it is women who suffer most when the pumps fail. It is they who have to walk a longer



distance to fetch the water. If the water is not safe for drinking, it is they who have to tend the sick. It is in their interest, therefore, to have the pumps functioning all the time.

It was also an attempt to involve the village women in a community activity which struck a blow to their stereotypical roles and gave them a sense of purpose and equality. Even a limited success of such an effort would be worthwhile. The women mostly came from the ranks of the animators who had already been working for the project and were ready to take on a new challenge. For many of them it was a valid source of income for the family.

The training component was specially designed for the women and teams of three women were allotted a single area of work. What started as a source of curiosity and even ridicule from the male members of the community, ended up as much appreciated service. Women mechanics responded promptly to all calls of help and even managed to extract voluntary help from the men when handling heavier metal parts of the pump.

In 1992, when a formal assessment of the scheme was carried out, it was revealed that not a single handpump allocated to the women mechanics ever remained out of order for more than 24 hours. The villagers themselves would go to the women and assist them in carrying the tools or handling the heavy parts of the pump. The extra income was an additional incentive to that of increasing self-confidence in the women and their gaining an independent status within the community.[6]

This is a strategy that has much to contribute in rural communities of any developing country, where women do long hours of labour, but remain unremunerated and unappreciated by their men. At the same time, it is a self-help mechanism that would be valued by the women themselves.

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Reference?

1 Instruments used for ground water exploration. Wadi Terrameters allow almost any type of survey to be conducted with high precision, and help to determine depth of water table, aquifer thickness, and water quality.

2 "Managing Guineaworm, Health and Water Supply, the SWACH Project of Rajasthan," Anil Bhatt in association with Salil Dave, Indian Institute of Management, Ahmedabad, 1989, pp. 17.

3 "Managing Guineaworm, Health and Water Supply, the SWACH Project of Rajasthan," Anil Bhatt in association with Salil Dave, Indian Institute of Management, Ahmedabad, 1989, pp. 18.

4 Based on *Implementation Guidelines for Drinking Water, The SWACH Manual,* vol. 1.

5 "Managing Guineaworm, Health and Water Supply, the SWACH Project of Rajasthan," Anil Bhatt in association with Salil Dave, Indian Institute of Management, Ahmedabad, 1989, pp. 20.

6 A Note on SWACH, UNICEF 1992.

8
Fighting the cyclops: the funnel filter

Infrastructural interventions are not infallible, nor can they by themselves totally eradicate guineaworm or other water borne diseases. Even after the right infrastructure has been put in place, it is necessary to initiate a monitoring process, and other allied interventions as a strategy to maintain a standard of safety in the available drinking water.

In December 1989, SWACH initiated a study by the department of Limnology and Fisheries, University of Rajasthan, to assess the water quality of rural stepwells and handpumps in the project districts. The study was also expected to assess the existing domestic water filtering system and if required, develop an improved design for a filter.

The objectives of the study were enumerated as follows.

- To understand the population structure and distribution of planktonic copepods in stepwells.
- To develop an efficient low-cost fabric filter.
- To evaluate the suitability of WHO and other field kits for water and plankton analysis in the SWACH project area.

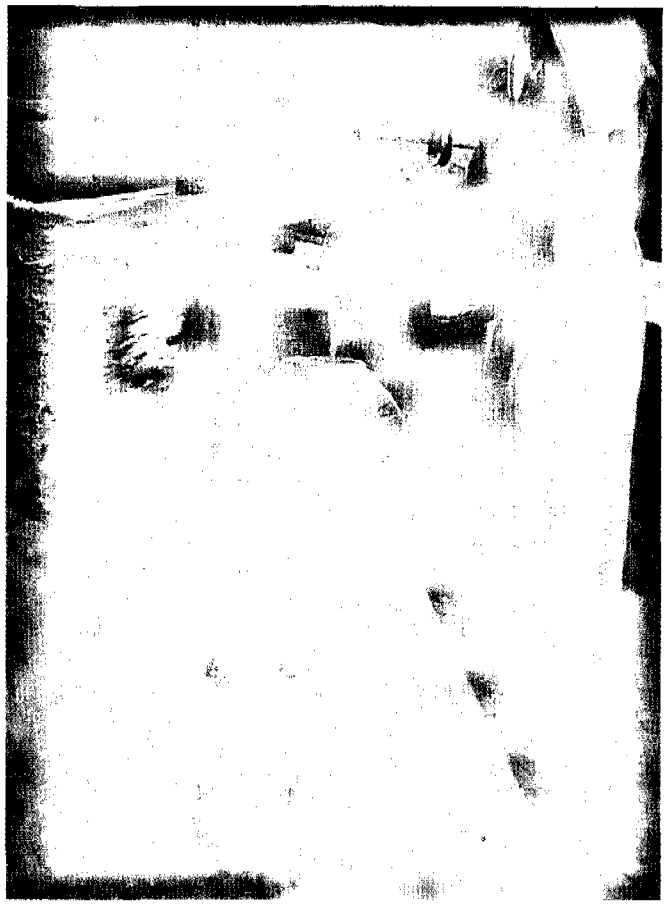
Initially, a statistical model was developed for sampling stepwells, converted wells and handpumps in over 3000 villages in the districts of Udaipur, Dungarpur and Banswara. The villages were finally selected on the basis of accessibility and the extent of guineaworm infestation.

Testing for Chemical and Biological Impurities

Almost all the chemical parameters assessed were within the prescribed limits of WHO, except water hardness, chlorides and fluoride, which were found in higher concentrations in some of the water sources.

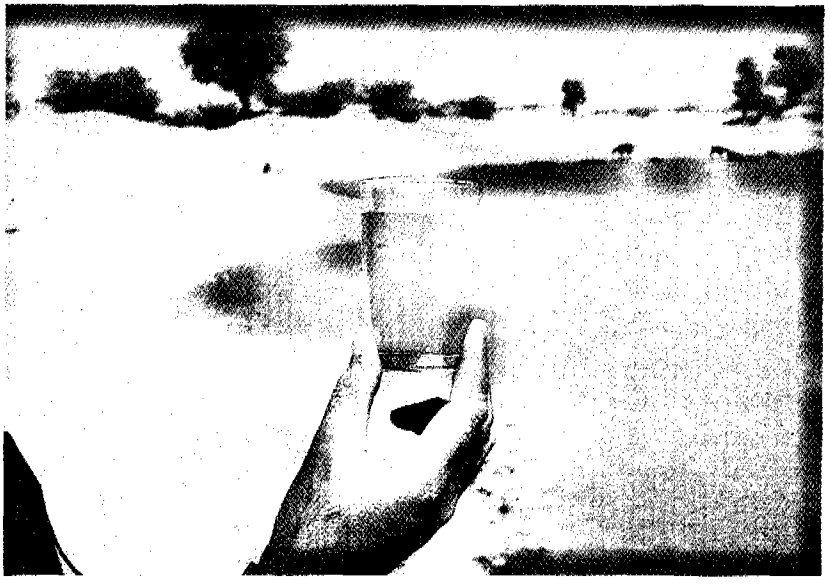
Wherever the presence of chlorides and fluoride and the hardness of water exceeded the prescribed limits of WHO, the study identified the area as vulnerable and recommended abandoning or suitably treating the water to make it potable.

Verifying the bio-logical parameters, the study found definite indication of widespread seepage of organic matter or sewage laden surface water into the ground water. This indicated that there was immediate need to remove garbage dumps, latrines, cattle sheds, etc. from the vicinity of the affected water sources, even though the relative safety of handpumps was confirmed when compared with



stepwells and converted wells in the area. The worst affected were the unconverted stepwells.

Chlorination was suggested as the simplest solution. Powdered chlorine or calcium hypochloride is available in the form of compressed tablets which can be added to a pot of water. New disinfectants available include hydrogen peroxide with catalytic silver.



Carriers of Guineaworm

Cyclops and their larval stages, called nauplii, live in the water of wells and are the intermediary hosts of guineaworm. The cyclops species *M. leuckartii* is a well known vector of the dracunculus worm all over the world. *M. varicans* and *P. fimbriatus* have been reported to be naturally infested with guineaworm larvae in Rajasthan.

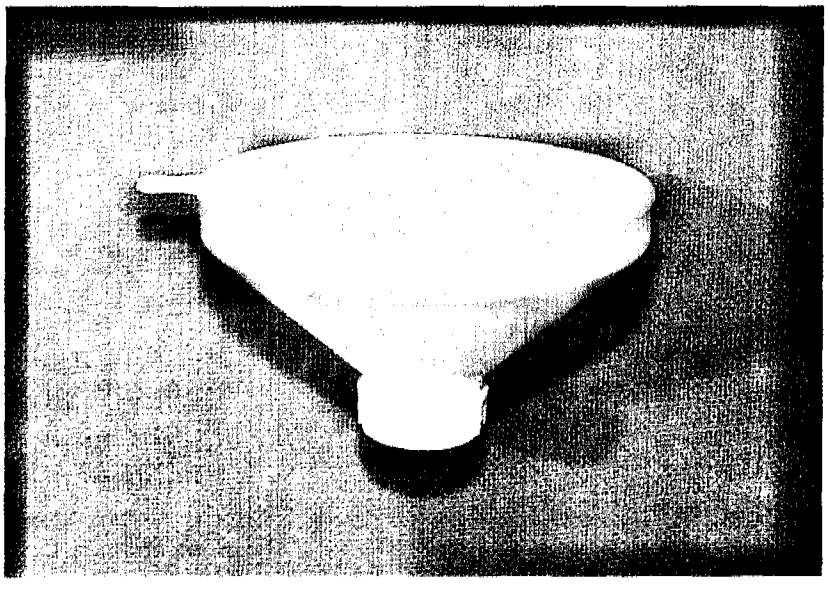
It is believed that only the adult cyclops serve as primary vectors of the worm in the infective stages. However, it is known that the nauplii too ingest the guineaworm larvae, although the larvae are in a non-infective stage and the number ingested is very low.

By the time the nauplii become adult cyclops, the guineaworm larvae they have ingested reach the infective stage, rendering them unsafe.

Despite the fact that there is seasonal variation in the number of cyclops in a water source because of their breeding periodicity, they are present almost throughout the year in any water body. But there are always more cyclops in stepwells than in the converted wells.

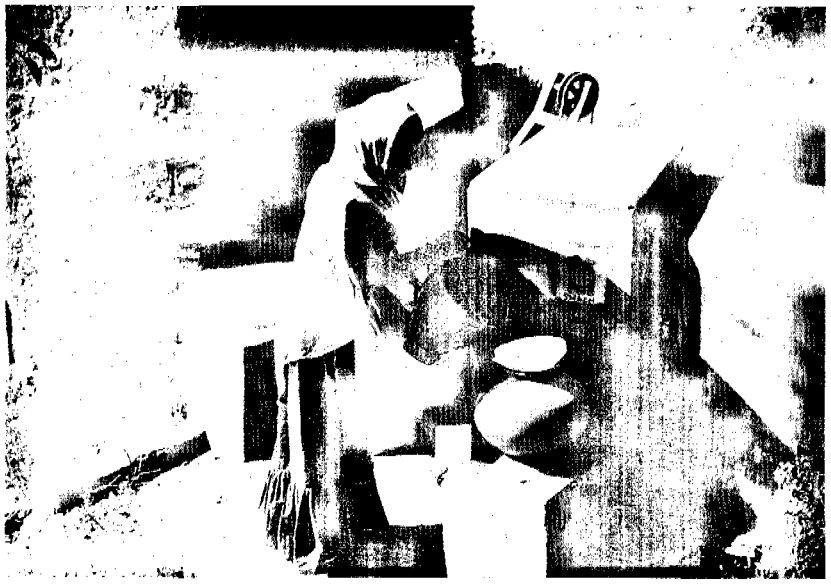
This is because with constant human interference, the stepwell water has a larger quantity of finely divided organic matter which is food for the cyclops. With less organic matter in the converted wells, the population of cyclops becomes naturally lower.

The study suggested that for artificial control of the cyclops population, the disposal of organic waste in the water should be prevented. In addition, periodic removal of algae, macrophytes and deposits at the bottom of the water source would help, as would releasing fish which eat and destroy the cyclops.



Implementing a Chemical Intervention

Converting the stepwells was only one of the methods by which the SWACH project attempted to control the transmission of guineaworm disease. By itself, it would not be a final solution to



guineaworm. Organic matter cannot be wholly removed from a water source; neither can the cyclops population be entirely eliminated.

To support the effort, the project team also treated the water of the wells with an organo-phosphorous compound called temephos. The dose was 1 ppm and the periodicity of the application was 30 days. The study found that this intervention could help to reduce the cyclops in the well, but there was a margin of failure.

Two temephos treated wells were kept under constant observation for the recurrence of cyclops for a period of two months. In hot temperatures, the cyclops reappeared after 20 days. It is possible that the treatment would be more effective if it is undertaken at shorter intervals during the SUMMER season. However, there are other problems attached to that solution.

The phosphate in temephos increases algal growth, especially of blue-greens which are not desirable in drinking water. The algae promote bacterial growth and the growth of cyclops. Some blue-greens also produce harmful toxins, although they are rare in water that is being constantly used and thus replenished.

The Final Solution: a Fool-proof Filter

Conversion of wells, treatment of water sources with temephos and provision of handpumps have all contributed towards safer water for the people of the SWACH districts. But the final proof of safety against guineaworm is good health practices, which include the habit of filtering drinking water. The study took a close look at the filter then in use and designed an improved version which became a major input in the project.

All filters used by SWACH were tested for their mesh size. It was found that they could only keep out the larger cyclops and therefore could not be totally relied upon to render the water completely safe from guineaworm transmission. The study concluded that the green and white cloth filter also had a short life span of 3 to 6 months, depending upon the manner and extent of use.

The best solution was to produce a filter with a mesh size of 0.07 mm, small enough to remove all cyclops and their nauplii. At the same time it was important that the fabric should maintain an efficient filtration rate over a period of time.

Filters made with bolting silk no. 30 were found to have all the necessary attributes. However, as the fabric was too expensive for mass production, high quality, high density polyethylene (HDPE) became the final choice.

The HDPE mesh is strong and used under normal conditions, should last for about one year. It also has a high filtering rate of one litre per 17 seconds, which is more than that of any other fabric used in the project. The main body of the filter was designed to be a plastic funnel, with the filter mesh fixed to the narrow end of the funnel. Once the original mesh wore out, it could be replaced with another affixed to a small plastic rim which could be screwed on to the narrow end of the funnel like a cap.

SWACH chose one of five designs and this was fabricated and tested for acceptance at the village level independently by a local centre for agriculture science. After the new filter was produced and distributed, the animators carried in their kits the small replacement caps for use when required. Mass produced,the filter costs less than Rs 7 (or US $ 0.23) a piece.

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9
The need for constant vigilance

The functional flexibility that had become part of the SWACH project organization, required an innovative approach to its monitoring and evaluation efforts. The short time span for the ultimate goal of eradicating guineaworm from these districts dictated the necessity for a foolproof monitoring strategy—at least as far as humanly possible.

The Plan of Action stated:

> As the project involves a number of exploratory and, as yet, untried activities... it is essential that a simple composite monitoring system be developed as early as possible. This will enable the project management as well as GOR and UNICEF to continuously review and, if necessary, adjust the concrete operations. The overall system will comprise the following major processes:
>
> - inbuilt physical, financial and performance monitoring, based largely on existing routines within the respective implementing agencies.
> - participatory monitoring, particularly through the social animators, on the performance of the project delivery system, including conditions [of] and problems with handpumps and converted stepwells.
> - periodic inspection reports through standardized checklists.
> - external assessments, e.g. through spot and sample surveys of key problems.
> - reviews.

The monitoring framework of the project created an efficient scheme of regular reports from the field. The statistical data generated by these reports went into a computerized database for future analysis. The numbers have always been generally encouraging in the project. Most of the activities had been well planned and appeared to have a positive impact on the beneficiaries. Stepwells were converted, handpumps were installed, medical camps for surgical extraction of guineaworm were held across the area. The numbers in the database grew daily throughout the SWACH years.

The last item in the Plan of Action referred to annual reviews to be carried out jointly by the Government of Rajasthan and UNICEF with the participation of the Government of India and SIDA. These reviews were also meant to finalize and approve the workplan for the forthcoming year.

The Framework for Evaluation and Assessment

The Plan of Action also mentioned a mid-term evaluation to be undertaken in 1988, by the Government of India, UNICEF and SIDA and occasional independent evaluations by experts and reputed organizations.

The monitoring indicators were identified as

- Training of Anganwadi workers, health guides, social animators and village contact teams.
- Number of trained handpump mechanics and incidence of drop-out.
- Number of group meetings held regarding community awareness and health improvements.
- Number of stepwells, handpumps or any other engineering interventions and the quality of their construction.
- Functioning and utilization of facilities constructed.

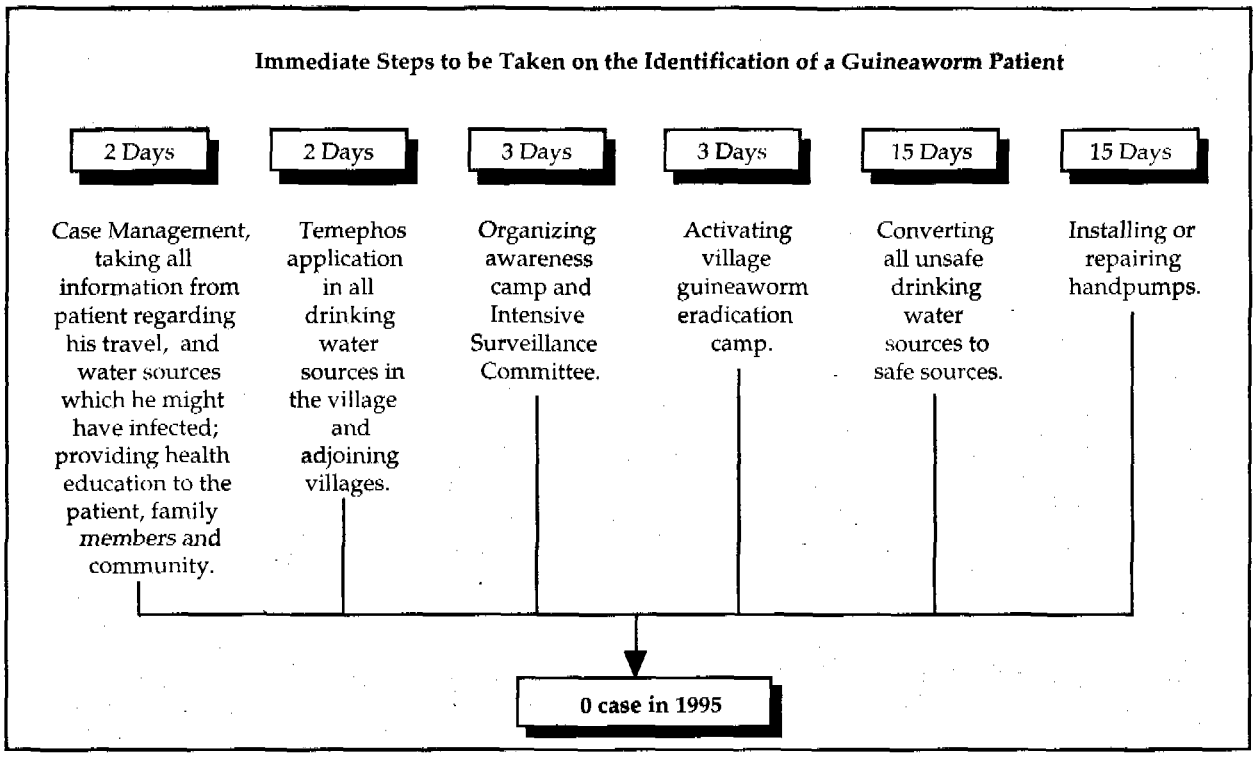
With the best of intentions, the Plan of Action did not spell out in detail the methodology for monitoring, which would have to be developed and honed to the specific requirements of the project and reassessed from time to time. The operational framework of the monitoring exercise was, therefore, formulated jointly by UNICEF and the Project Director, along with the design and testing of monitoring formats. Detailed work plans, however, were formulated by the project staff and the implementation was reviewed annually.

The set of formats that were produced for the physical, financial

PHYSICAL TARGETS AND ACHIEVEMENTS, 1990 TO 1995

ACTIVITY	FIRST PHASE									SECOND PHASE UPTO JUNE 1995			TOTAL UPTO JUNE 1995		
	B/D			U/R			TOTAL								
	Target	Achieve-ment	%	Target	Achieve-ment	%	Target	Achieve-ment	%	Target	Achieve-ment	%	Target	Achieve-ment	%
Drilling of Boreholes	5036	4723	94	4706	4329	92	9742	9052	93	1020	896	88	10762	9948	92
Successful Tubewells	4300	4279	99	4000	3749	94	8300	8021	97	900	818	94	9200	8839	96
Handpumps Installed	4300	4257	99	4000	3704	93	8300	7961	96	900	699	78	9200	8660	94
Stepwells Converted	3600	4164	116	3900	4989	128	7500	9153	122	600	342	57	8100	9495	117
Construction of washing platforms and cattle troughs	5450	6177	113	6100	7717	127	11550	13894	120	700	227	32	12250	14121	115
Handpump drainage improvement	5700	5539	97	9000	10088	112	14700	15627	106	1000	378	38	15700	16005	102
Construction of school latrines	600	691	115	1000	874	87	1600	1565	98	-	-	-	1600	1565	98
Construction of Animators' latrines	-	149	-	-	132	-	-	281	-	-	-	-	-	281	-
Construction of Household latrines	600	2318	386	1100	4555	414	1700	6873	404	1600	236	15	3300	7109	215
Construction of Urinals	-	605	-	-	984	-	-	1589	-	-	-	-	-	1589	-
Village Drainage Schemes implemented	12	18	150	12	16	133	24	34	142	17	17	100	41	51	124
Handpump platform improvement	1500	1631	109	750	1357	181	2250	2988	132	100	993	-	2350	3981	169
Reconstruction of cattle troughs	-	148	-	-	80	-	-	228	-	-	-	-	-	228	-
Reconstruction of washing platforms	-	50	-	-	55	-	-	105	-	-	-	-	-	105	-
Hydrofracturing of failured boreholes	-	13	-	-	13	-	-	26	-	-	-	-	-	26	-
Repair of old converted stepwells	-	100	-	-	134	-	-	234	-	150	90	60	150	324	216

Source: SWACH Progress Report, 1993, 1994, 1995



and performance monitoring included quarterly reports to be submitted by the Project Director to the TAD Commissioner and UNICEF, based on reports submitted to the Project Director by the Project Officers in the first week of every month. The Project Officers' reports were reviewed at a meeting every month and formed the basis for discussions in the meetings of the District Project Implementation Committees which had the power to intervene in inter-agency coordination issues. The Project Director's reports, on the other hand, were periodically discussed at a meeting of the Committee of Directors which was concerned with inter-departmental coordination at the project level.

The Plan of Action used the phrase "participatory monitoring" to describe the qualitative checks and balances that the project was to employ for successful implementation. It was not enough to know what number of stepwells had been converted and at what cost. The extent of utilization of the converted wells would indicate the acceptance level of that particular physical intervention. It was equally important to know how far the community participated in a certain activity to get an idea of whether there was actual change of perception and behaviour resulting from the activity. This feedback would come from the animators' reports to the office of the Assistant Project Officer responsible for health education. A set of guidelines were developed for this purpose which were reflected in the design of the log books carried by the animators in their regular course of work.

The periodic inspection reports mentioned in the Plan of Action took the form of tour notes of SWACH functionaries and UNICEF personnel associated with the project, which became additional sources of information on the status of various project components.

Further evaluative material was generated through periodic studies of the project by specialized outside agencies. In addition to providing insight into the community's felt needs and the quality of the intervention efforts, the studies offered recommendations that helped to reassess problems and introduce improvements in the implementation of the project.

The Need for Constant Vigilance

The SWACH effort is now in its final phase. The number of cases has dropped to zero, but it is important that vigilant Surveillance be sustained till eradication is declared after three consecutive years of zero incidence is achieved. Even a single patient left undetected at this stage may mean a resurgence of the disease, for a single guineaworm can transmit the

disease to an entire community.

The case containment strategy adopted by SWACH attempts to detect every patient at an early stage of the disease and take the necessary steps to prevent transmission. In 1992, the scouts managed to bring for treatment 88 per cent of the patients before they had reached the infective stage, resulting in a 90% drop in cases in 1993. In 1993, scouts detected 91 per cent of cases in the pre-emergent stage, resulting in a 95% drop in cases in 1994. In 1994 scouts detected 100 percent of cases resulting in zero cases in 1995.

The Guineaworm Surveillance Scouts Scheme, which was launched in 1990-1991, was expanded the next year when it was found that the scouts were most effective in their own villages. In 1992, therefore, the project selected 927 scouts and 103 coordinators from all villages under surveillance. In villages which were in the vicinity of the surveillance villages, or were linked to them by main all-weather roads, intensive village contact drives were periodically undertaken and school children were mobilized to detect guineaworm cases.

Case detection was the primary stage of the SWACH surveillance strategy. Once a patient was identified, a number of measures were adopted in quick succession: surgical extraction of the guineaworm was followed by the application of temephos in the water sources accessible to the patient and funnel filters were distributed in the area to contain transmission of the disease through contaminated drinking water.

Constant vigilance has indeed brought up rich rewards. The dramatic change in the trend of the disease in these four endemic districts is a matter of hope, not only for the people who have suffered from guineaworm disease for generations, but also for health planners who can transform the micro level experiences of SWACH into macro realities in other parts of the country.

10
Sustaining success

Since 1993 there has been no case of guineaworm in Banswara. In 1994, Dungarpur and Rajsamand reported no cases of guineaworm. In 1995 Udaipur also reported no case of guineaworm. The SWACH area is now free of guineaworm. Even though guineaworm eradication is only a part of what they had set out to do, the endemic status of the four districts, combined with the visibility of the required interventions and achievements, made guineaworm eradication the focal point of a project that was primarily conceived to bring about a transformation in the lives of the rural people.

Through the SWACH years, guineaworm became a symbol of all that conspired to keep the rural society in the grip of poverty and backwardness.

Winning the battle against guineaworm, therefore, symbolized a victory against ignorance and apathy generated by years of struggle for survival — two factors that have always been major obstacles to social change.

Looking beyond the Numbers

Intensification of the efforts at this last stage of the project certainly achieved the desired results in statistical terms. But the greatest challenge facing SWACH now is the formulation of a strategy to build upon the physical and qualitative gains of the project.

A village specific strategy has been evolved at this stage to ensure that vigilance is maintained and action promptly taken in the case of a new guineaworm patient. But much of the work load of detection, treatment and preventive action will have to be supervised by the villagers themselves in the future. By giving them a glimpse of a better, healthier and more productive existence, the SWACH team hopes to generate a demand in the villagers for the same services from the official sources that will continue to function in these areas.

Consolidating the Gains

In this last phase of the project, the SWACH team will concentrate their efforts on consolidating their gains. By keeping guineaworm out of these villages, they hope to retain the community's interest in health and the environment, and keep alive the realization that the villagers have a stake in official development efforts — that they are not just the beneficiaries but also the agents of change. A shortlist of SWACH responsibilities in 1995 looks like this:

- Sustain the surveillance work for continued zero incidence.
- Treat patients (if any) immediately to check further transmission.
- Isolate the patient — keep him/her away from water sources.
- Maintain all drinking water sources.
- Continue social mobilization campaigns.
- Disseminate information on guineaworm, water, health and sanitation through all possible media.
- Focus on health and sanitation issues to improve general health status.
- Generate Community involvement so that they take over surveillance after SWACH ends.

Meanwhile, 1995 is a landmark year for in the villages of Dungarpur, Banswara, Udaipur and Rajsamand. It marks the end of the dreaded guineaworm and the beginning of a time when an awakened people will demand and work for their right to better health and sanitation. ❑

11
Changing the lives of rural women

The broader aims of the SWACH project included the sharing of health information with the rural community and inculcating good health practices as a prelude to increased productivity and a better life. As water and family health are very much the responsibility of women in the rural community, SWACH attempted to draw out village women and encourage them to actively participate in the programme. In the process the project also promoted the empowerment of women.

Once SWACH began functioning, the lives of women in these rural districts changed. However, this change did not happen overnight, nor were all women at once keen to be participants in the programme. The process began with the project and was carried on through a series of awareness camps organized for the women, which allowed them to change their knowledge and practice in the areas of water, health and environmental sanitation over time.

In 1989, an impact study of these camps was assigned to the Department of Home Science Extension Education, College of Home Science, Rajasthan University. The study was carried out in six administrative blocks of Udaipur district, and covered a sample of 43 villages. Four types of awareness camps were studied:

- Environmental sanitation camps: the focus was on safe sources of drinking water; sanitary conditions near water sources; handpumps and caring for them; water use and storage; recycling waste water from handpumps; sanitary latrines and soak pits; control of disease bearing insects that breed in stagnant water; and disposal of garbage and waste water.

- General awareness camps: the issues related to general health and sanitation; immunization for children and pregnant women; oral rehydration therapy; management and prevention of common childhood diseases; water borne diseases and how to control them; use and storage of safe drinking water; personal and environmental sanitation.

- Camps for training of dais or traditional midwives: with less that 50 per cent of the villages covered by trained birth attendants,[1] training was given in prenatal and post natal care of the mother, safe childbirth practices, risks involved in chidbirth and care of the newborn.

- Kitchen gardening camps: the emphasis was on nutrition, balanced diet and better cooking methods; appropriate vegetables and fruit that could be grown by reusing waste water from handpumps; compost making; use of fertilizers and plant protection measures; methods of storage and preservation; and cooking to save nutrients.

Organizing the Camps

The camps were started from the month of July 1988 in Udaipur district and continued for a year. At the official level, camps such as these are usually organized by the District Rural Development Agency (DRDA), which takes the help of locally active NGOs to do the grassroots level work.

In its effort to avoid duplication and integrate with work being done in the field by government and other agencies, SWACH decided to leave the organizing of the camps to DRDA and the NGOs. The funds came from SWACH, and along with it, came technical support in the form of teaching material and aids, resource persons, provision of transport, etc. Representatives from SWACH, DRDA and UNICEF formed the coordination committee. The committee carried out multiple tasks:

- Planning and developing the course contents and teaching materials.
- Checking on the available resources, infrastructure and

expertise available with local NGOs who would participate in the programme.

- Setting guidelines and an annual action plan for the effective implementation of the camps.
- Monitoring the day-to-day running of the camps.

Two sets of durations were planned for the women's camps:

- The residential ones lasted for three days and the participants, who came from a cluster of villages, were expected to stay in the village where the camp was being organized. In these camps, the evenings could be utilized for both educational and recreational activities for an audience that was captive.
- The non-residential ones lasted for five days. These camps took place in one large village, with a cluster of small neighbouring hamlets. As they all lived in the locality, the women came to the camps for five to six hours each day.

Before the camps began, an orientation workshop was organized, by DRDA and one of the NGOs, where 40 participants came from the 21 NGOs in the area. All of them had previous experience of running camps for women. However, it was felt that there was need to familiarize them with the concept, philosophy and objectives of SWACH which needed to be reflected in the work done at the camps.

The workshop also held a critical review of a previous set of camps, to better understand and develop the methodologies to be used in the SWACH camps. The design and content of the resource material used in the previous camps were also discussed and a tentative programme was worked out for the next six months.

The Impact Study

The impact study was initiated after 50 camps had already been conducted by 16 NGOs over the first eight months of the programme. The objectives of the study were identified as:

- To study whether rural/tribal women had gained adequate knowledge of health and sanitation after attending the four different types of camps.
- To investigate whether these women had adopted some of the health and sanitation practices advocated at these camps.
- To measure to what extent the acquisition of knowledge was affected by personal and socio-economic variables.
- To study the effectiveness of organizational inputs by separate NGOs, especially in relation to the educational content and its coverage, the teaching methods and aids used, learners' participation, coordination with other organizations and the management of the camp.

It must be remembered that of the total sample of 207 rural women in the camp, only eight had formal education up to the primary level. Most of them were married, had nuclear families, came from low caste groups and had agriculture as their main occupation. A majority of them belonged to families of small and marginal farmers and had very little social interaction. As most of them were illiterate, their level of exposure to information was extremely low and limited to the immediate concerns of daily existence.

The Findings of the Study: Environmental Sanitation

Pre-test and post-test findings on the general knowledge of the women participants about environmental sanitation revealed an encouraging trend. The level of knowledge before the camp was low and exposure to information evidently had an immediate impact. When the participants were distributed in different categories of knowledge after the camp was over, it was revealed that a majority of them, about 55 per cent, exhibited good or fair knowledge

of the subject, and only a few were in the poor or very poor category. Analysis by components of knowledge also gave a satisfactory result.

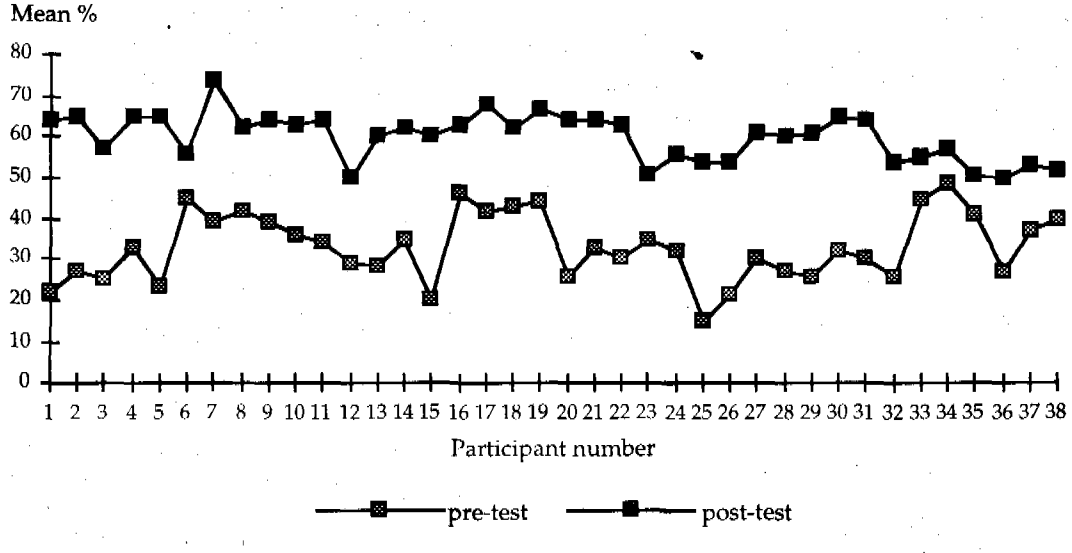
After the camp, a comparison w as made of the knowledge level of the participants and non-participants, to reassess the earlier findings. This approach also made it possible to obtain information from a larger number of women and provided time-series data to determine the retention of knowledge over a period of time. It became evident that in both categories a majority had poor overall knowledge of the subject. However, the number of women with a fair knowledge of the subject increased significantly among those who had attended the camp; while, the number with very poor knowledge was significantly higher among the non-participating women.

A majority of the participants displayed fair to good knowledge about safe drinking water and the use, care and maintenance of handpumps; while a majority of non-participants had poor or very poor knowledge of these components. The knowledge of the need for sanitary surroundings near homes and water sources was low in both groups, but the women who participated in the camps had a relatively better score than those who did not.

A breakdown of participant knowledge by components also revealed that in many cases the knowledge they already possessed, was partial. For example, many women knew that water from the storage pot should be taken out with a separate container with a long handle, but had not bothered to find out why the handle was important. They knew the use of filters, but did not know the reason for using double-sided filters. Many of the better practices were followed more because they were part of a tradition, rather than because of a logical reason. Most of them did not understand the relationship between a sanitary environment and good health. Cleanliness in the home should be practised, they said, because it made the house look good. Once again, the connection between cleanliness and health was missing.

Sanitary latrines proved to be another problem area, as the concept did not fit in with a culture that had developed outdoors. Many considered a sanitary latrine at home as something dirty. Similarly, being used to a dark and inadequately ventilated kitchen, it was difficult for the women to understand the need for light and fresh air, neither of which were strongly connected with health in their minds.

Pre and Post Test Knowledge Scores of Participants in Environmental Sanitation Camp



Source: *Women Awareness Camps, an Impact Study,* Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p.44A.

General Awareness

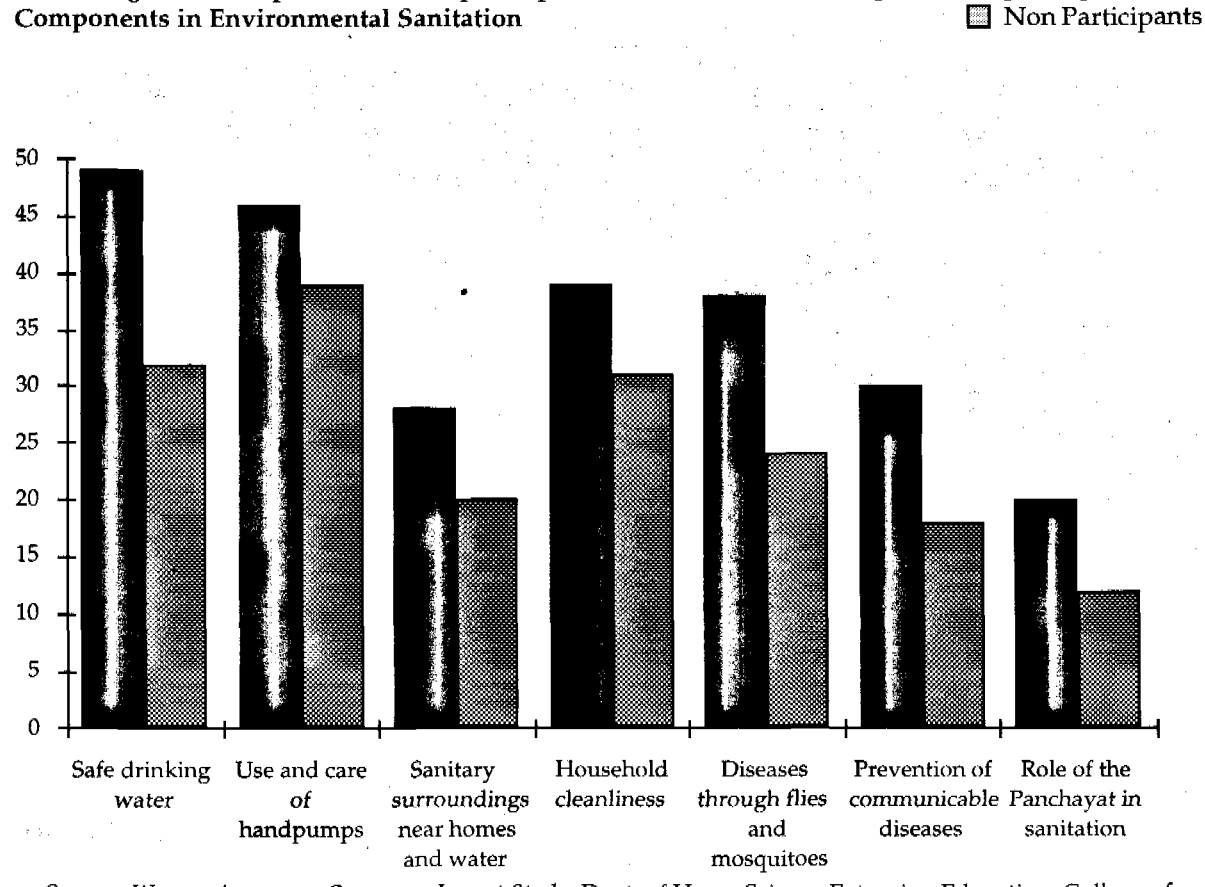
A three-day residential general awareness camp with 38 women participants was the subject of the same study. During the three days, most of the time was devoted to discussions on the formation of women's groups, and the role of such groups in solving social, personal and economic problems for women. A talk

Mean % Scores of Pre and Post Test and Gain in Knowledge in Different Components of Environmental Sanitation

Components	Initial mean/scores	Post mean % scores	Gain in knowledge
Safe drinking water	45.59	75.00	29.41
Use, care and maintenance of handpump	38.89	59.94	21.05
Sanitary surroundings for house and water source	27.96	49.89	21.88
Household cleanliness	59.86	88.60	28.80
Diseases through flies, mosquitoes and their control	24.71	61.70	36.99
Prevention of communicable diseases	20.12	54.95	34.83
Panchayat's role in keeping the village clean	7.60	29.24	21.64

Source: *Women Awareness Camps, an Impact Study*, Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 46

Knowledge of Participants and Non-participants of Different Components in Environmental Sanitation



Source: *Women Awareness Camps, an Impact Study*, Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 49A.

was also organized on Oral Rehydration Therapy (ORT) and immunization of children and pregnant women.

The study found that the format of this camp was inadequate as far as transferring information on health, sanitation and safe water was concerned. The talk on ORT and immunization was too brief to enhance the knowledge level of the women in these areas. There was also no teaching aid used and it was difficult for the participants to retain whatever they heard. The pre-test and post-test results showed a marginal change in the knowledge levels and bore witness to the fact that general awareness camps might not always be the right venues for disseminating information on environmental sanitation, safe water and guineaworm, as they were likely to have other priorities.

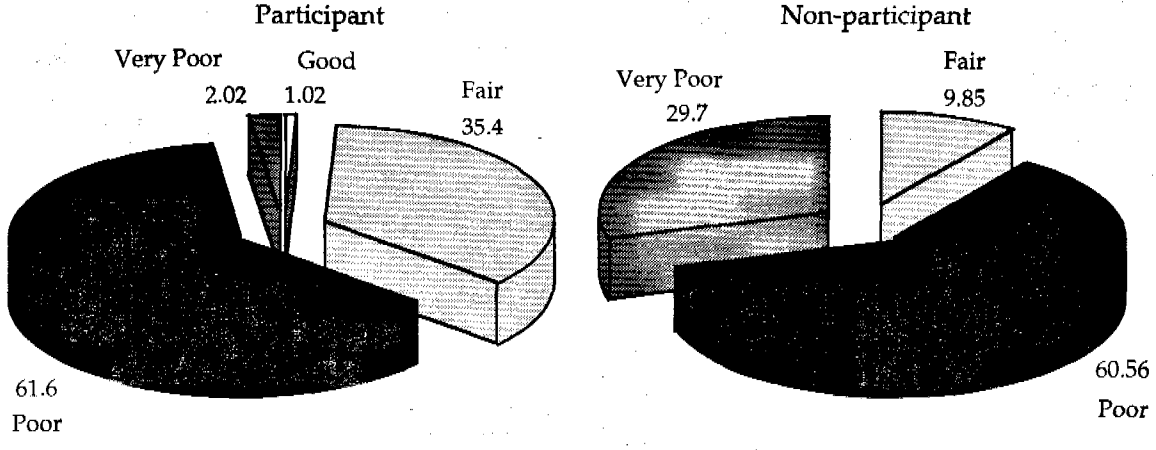
A study of 65 participants drawn from five general awareness camps, and 75 non-participants, provided a confirmation of the findings of the single camp. Both groups registered poor levels of information on the specific area of interest of the study. Although five of the seven components found the participants ahead of the non-participants, the difference was not significant.

Training of Traditional Midwives

The study team first looked at a single training camp where the participants registered tremendous improvement in their knowledge level after the camp. To get a wider picture, a composite study was made of 65 participants from three training camps and 65 non-participants. All of them worked as midwives, but their overall knowledge in ante- and post-natal care and safe childbirth was not found to be satisfactory. Nevertheless, the midwives who had attended these training camps had improved their level of knowledge considerably. Among non-participants, 83.33 per cent had very poor overall knowledge of the relevant topics while the rest registered poor knowledge. Among participants of the camps, none belonged to the "very poor" category; 58.33 per cent registered poor knowledge and the rest had a fair knowledge of the topics. Measured separately, the knowledge of different components of the training programme was higher in the participants of the programme in most cases.

The study team felt that the training camp was of too short a duration for a subject that was of a somewhat specialized and technical nature. It was evident that the training programme did have a positive impact; only this could have been further enhanced if more time was given to the participants to absorb the large body of information that was offered to them.

Overall Knowledge of Environmental Sanitation in Participant and Non-participant Women



Source: *Women Awareness Camps, an Impact Study*, Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 49A.

Five Days at a Camp: A Diary

Day 1 ***Morning***: *The faculty and participants get to know each other.*

Afternoon: *Talk on environment, deforestation leading to less rainfall and lowering of the ground water level.*

Talk on importance of conservation to fight soil erosion and role of women in these activities.

Day 2 Morning: *A prayer and a song celebrating health and sanitation, followed by informal discussion on talks given on the first day.*

This develops into a discussion about concepts of natural environment and village environment, harmful effects of pollution, control of disease carrying insects, and measures to improve village environment.

In course of the discussion, some women mention, the best way to be healthy is to keep the home clean. But this is not easy to achieve across the village, as the people do not do anything together as a community. This leads to the formation of a committee of both men and women volunteers who would help to keep the village clean.

Talk on nutrition, health, balanced diets, simple labour saving devices in the kitchen and income generating activities for women.

Afternoon: *Talk on sources of water, how water gets contaminated, domestic methods of keeping water clean and why women should know about safe drinking water.*

Talk on safe delivery of babies at home, care of the mother and newborn, breast feeding, babies at risk and immunization. A discussion follows on the right age for marriage, how conception takes place, need for spacing between children and methods of family planning.

Day 3 Morning: *Talk on how to know when water becomes dirty, reasons for looking for a safe source of drinking water, diseases caused by dirty water, flies and mosquitoes, how water sources can be kept clean, the handpump and purifying water with alum.*

Talk on literacy for women.

Demonstrations of the solar cooker and the pit latrine.

Talk on maternal health, high mortality rate of women and children in India, age at marriage and conception of first child, prenatal diet, need for immunization of pregnant women, problems of pregnancy, anaemia and weakness, preparations for and care and precautions during delivery, importance of hygiene during and after delivery, importance of family planning.

Afternoon: *Discussions on personal hygiene, household cleanliness, importance of sanitary pits and latrines, and sanitation and disease.*

Demonstration of how to prepare oral rehydration therapy (ORT) and discussion about its importance.

Day 4 Morning: *A visit to a handpump and demonstration of its operation, care of handpumps and how to keep it and the surroundings clean.*

Talk on the role of women in the community, their role as workers, the need for training and types of training courses available for women cultivators.

Afternoon: *Informal discussion on health and hygiene, followed by talk on safe drinking water. A slide of water containing guineaworm larvae is shown to each participant under the microscope. A discussion follows on the life cycle of the guineaworm and ways to prevent guineaworm disease.*

Talk on communicable diseases and their prevention.

Talk on how to maintain a clean home and care of cattle.

Cultural programme.

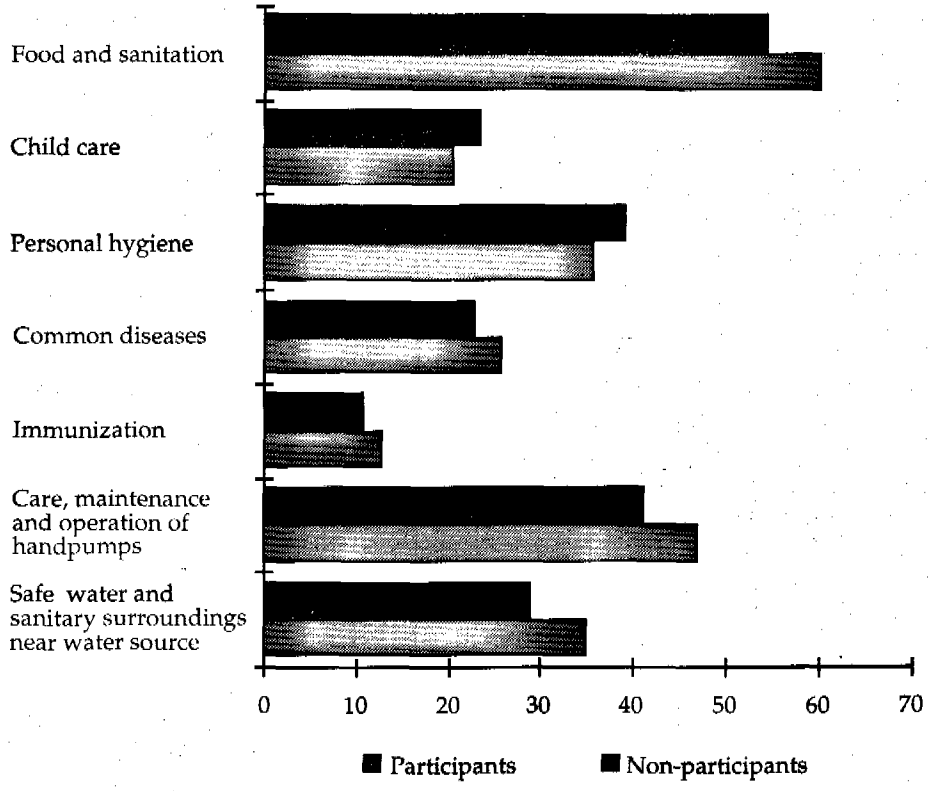
Day 5 ***Morning***: *The whole day is devoted to a review of all that took place in the past four days, through discussions and question-answer sessions. In the afternoon, at the end of the camp, everyone is given a double layered, two-coloured cloth filter.*

Growing a Kitchen Garden

During the period of the study, a single three-day residential camp was organized in Udaipur to train 17 women participants in growing a kitchen garden. As against the pre-test score of 20.83 per cent, the post-test score was 46.47 per cent — indicating a remarkable gain in knowledge. Some of the areas where the participants started with very little knowledge, the improvement was remarkable. Only one component, that of making a compost pit, did not register a high level of improvement. A comparison between participants and non-participants emphasized the gains from the training camp.

While 67.41 per cent of non-participants had poor knowledge of kitchen gardening, the count was 44 per cent for those who attended the camp. Among the non-participants, 21.34 per cent had very poor knowledge, a category that did not exist among the participants. The count for those with a fair knowledge of the subject was 11.23 for the non-participants and 53.33 for the participants. In addition, 2.66 per cent of the participants had a good knowledge of the subject, while none had reached that level

Knowledge of Rural Women in Different Components of General Awareness



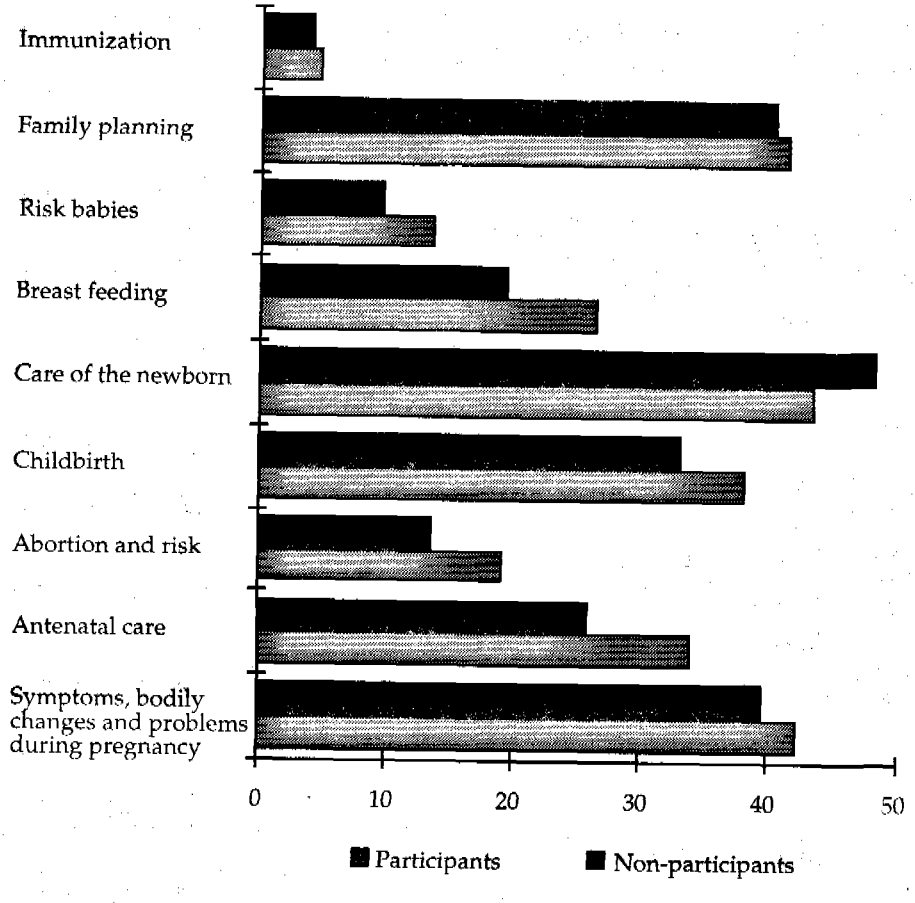
Source: *Women Awareness Camps, an Impact Study*, Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 109A.

among the non-participants.

Information — a Step towards a New Life

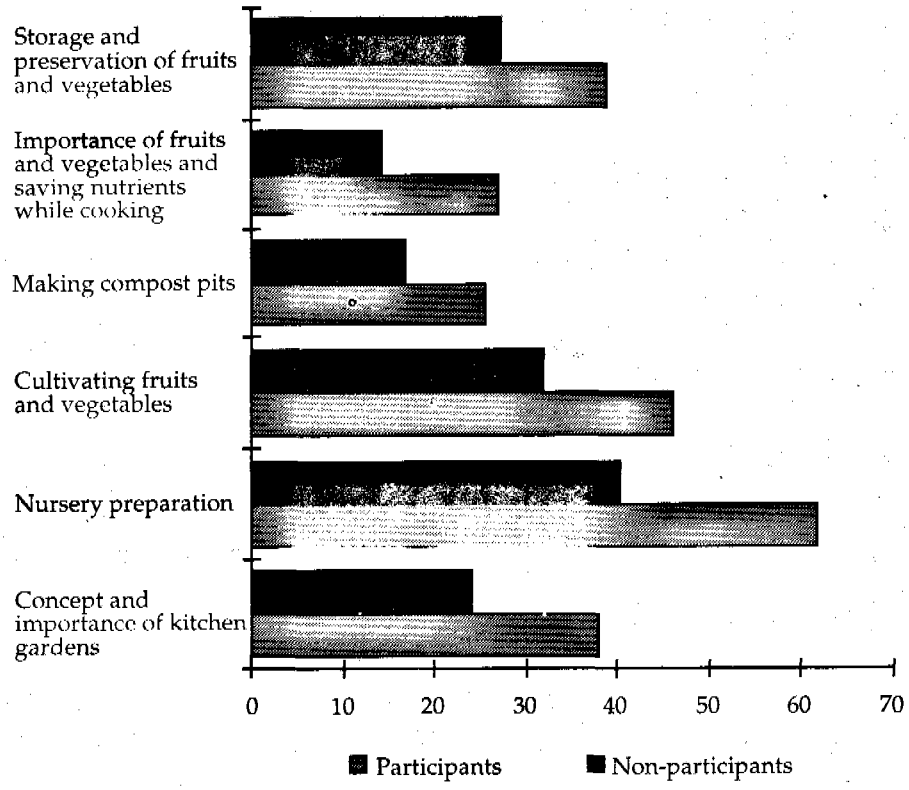
Of the four types of camps which formed the basis of the study, only camps for general awareness disappointed the team with their low scores. This does not take away from the value of such a camp; but obviously, a general awareness camp for women cannot have safe water, health and environmental sanitation as its primary theme, as it is essentially concerned with economic and social problems that specially affect women in a patriarchal community. SWACH, on the other hand, has the rare advantage of dealing with a specific area of work which is forever

Knowledge of Rural Women of Different Components of Midwifery



Source: *Women Awareness Camps, an Impact Study*, Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 109A.

Knowledge of Different Components of Kitchen Gardening in Rural Womer



Source: *Women Awareness Camps, an Impact Study,* Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 179A.

spilling over into the domain of the general — water affects everybody. Even the midwives training camp with its focus on birth associated problems, can only extend the scope of the SWACH programme, for water affects babies and mothers too.

Not surprisingly, the SWACH women's camps, along with giving specific information to the women participants, have also achieved some of what the general awareness camps do. They have developed the ability to draw more and more women out of their confined existence at home and into the life of the community. For many women from the SWACH project villages, the camps mark their entry into a new life — a less subservient and more productive life and the dawning of a sense of self-worth. ❑

1 *Women Awareness Camps, an Impact Study,* Dept. of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989, p. 16.

12
The story of two women

The women's camps were initiated by SWACH in the hope that women's participation in the project would provide the intervention efforts with a firm backing within the community from the people who were most affected both by the availability of water and illness in the family. There was also the hope that women would carry the message of health, sanitation and safe water right to the heart of the family, and in the process would create the atmosphere for greater productivity and a better life in which they themselves would play a pivotal rather than a secondary role.

The study which assessed the effectiveness of the different types of camps organized for women in the project area for a year, also included case studies of participating women, from which the following two case studies were taken.[1]

One: Kanni Bai, Villlage Iswal

Kanni Bai is a Scheduled Tribe widow of middle age, and a mother of two grown-up sons who have children of their own. They all live together in one house and work on their own land. Kanni Bai is the only midwife in the area and has attended the training camp for midwives. One of her sons is an active member of village contact drives organized by SWACH.

Water Collection

The family mostly get their water from the nearby handpump, but they also bring water from the well, because they prefer the taste of the well water. For drinking and cooking, water is stored in the home in earthen pots and metal containers. The containers are sparkling clean and kept covered on a raised platform. For bathing, there are cement tanks.

For filtering the drinking water, however, the family use a discoloured old piece of cloth. Even though they are aware of the double-layered filter and the long handled mug for taking water out of the pot, they do not use either of them. They did have a double-layered filter from the awareness camp, but when it got worn out with use, they did not bother to make another one like it themselves.

There are two handpumps in the village, but one of them has dried up some time ago. At the handpump, the family pots are cleaned with ash before being filled. The filter is also washed before and after use. But the pots are carried home uncovered. None of the family members wash their hands before taking water from the pot, which they do by dipping a glass into the pot. Children are not permitted to take water from the pot.

Sanitation at the Handpump

The handpump the family go to is placed on a slope and the soil is sandy and rocky. No water can gather there. Excess water flows down a roughly made drain. Women

of the village wash and bathe just a few feet away from the handpump. Kanni Bai's daughter-in-law notices some of the family's cows near the handpump. She quickly packs some mud at the mouth of the drain, fills the platform with water and makes the cows drink from it. She seems to be unaware that cattle should drink from a separate trough.

Sanitation at Home

Kanni Bai's family live in a house which is partly made of clay. There are two new rooms made with bricks which have enough ventilation and light. The old part of the house is one big room, a small kitchen and a closed verandah with no windows, but there is electricity. The interior is kept clean and though there is no proper facility for waste disposal, the surroundings have no garbage lying around. The house is on a hilly slope and there is therefore no stagnant water. Garbage is thrown in a corner of the cattle shed located at the entrance of the home.

The kitchen is dark and as food is cooked on a traditional stove, the walls are black with soot. Cooking is done in clay vessels and food is stored in the living room.

Washing and Bathing

Both activities are done in an open courtyard where a cement water tank stands on a raised platform. There is a well on the farm which is also used for bathing and washing. The tank water for having a bath is reused for washing clothes. Soap is not usually used for either activity.

The infants in the family are kept clean and look healthy, but the older children generally look dirty. They clean their teeth daily with ash or coal dust. The adults in the family go for defecation to the fields, but the children use an open space near the home. Hands are washed with soap afterwards.

Cattle Shed

The family owns two cows, two bulls and five or six goats. The goats are kept in the inner verandah, in front of the living room. The cows are in the shed in front of the house. The shed is not always clean as there is no drain. The garbage collects in a corner and is thrown in a pit on the farm every few days.

Food and Sanitation

Pots and pans are cleaned with ash and the women do not wash their hands before starting work in the kitchen, but hands are washed before and after a meal. The kitchen waste is thrown out into the courtyard and food is kept uncovered. Fruit and vegetables are not eaten regularly. Pulses and wheat are the staple food. Although plenty of vegetables are grown on the farm, they are mostly for sale.

Attitude towards the Camp

Kanni Bai's son is now the head of the family. He is happy to have his mother involved in different activities in the camp, but does not want his wife to do it, as she has many household responsibilities to fulfil and no spare time.

Kanni Bai herself says that the camps have taught her many new things about sanitation. She has also learnt about preventing several diseases, and feels that camps should be held frequently to reinforce what is being taught to the village women.

Two: Narbada, Village Vaijpur

Narbada, a girl from a Scheduled Tribe, is only 15 years old and studies in the fifth class. She has participated in only one general awareness camp held in her village. Her family earns a livelihood through agriculture and by using their bullock cart for transporting goods for other people. Narbada lives with her grandfather, an aunt, her parents and two school-going brothers who are 12 and 10 years old.

In Narbada's village, alcoholism is a major problem. The Anganwadi worker says that the men regularly drink and beat their wives. Most of the women go out to work as labourers. The men come home in the afternoons and sit idle. The women return from work in the fields to more work at home.

Water Collection

The handpump is the only source of water for the family, although there are wells in the village. Narbada knows that the handpump is the safest source of water and that dirty water is the cause of several diseases like guineaworm, diarrhoea and cholera.

The drinking water in her home is kept in clean clay and metal jars covered with clay plates and placed on a raised platform. Water is collected in clay pots which are washed beforehand. The filter is, however, a discoloured piece of old cloth washed before and after use. The pot is brought home uncovered.

Although they know about the double-layered filter, Narbada is not allowed to make one at home by her mother, who is old-fashioned and orthodox.

The family do not wash their hands when they take out water from the pots, nor do they use a long handled mug.

Sanitation at the Handpump

The handpump used by the family has dirt and stagnant water around it. There is an outlet for the water to be channelled to the fields, but it is not built properly and does not work too well. Narbada, however, cleans up the handpump platform when she comes to draw water.

Other families wash clothes, bathe and clean utensils near the handpump and the cattle drink from buckets kept just a few feet away. There are three handpumps in the village and all of them are in good working order.

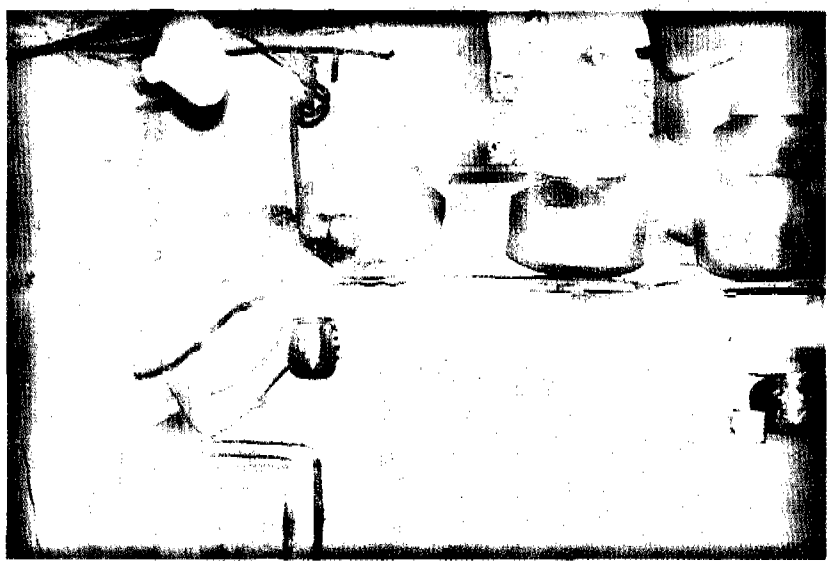
Sanitation at Home

The family live in two separate clay buildings with one large room in each and thatch roofs. Both houses have a wooden attic with a little door near the ceiling, where firewood and fodder are stored. The houses are clean, but dark and overcrowded. There are no windows because they are not considered safe.

The kitchen is part of the big room, separated from it by large clay vessels for storing grain. Food is cooked in clay vessels on a traditional stove and the walls are sooty. The kitchen does not look tidy and all the utensils are kept on the floor. Waste water is thrown outside the home and garbage is collected in a corner, to be disposed of later.

Washing and Bathing

Narbada says that the family wash and bathe usually at the well in the field. But it is evident that neither activity takes place daily. Her next door neighbour is a woman who attended the awareness camp with her. She is seen washing a child with soap in a tub. The tub water is reused over and over again for the other children in the family. As the mother has to collect water from a distance, this is her way of conserving water. She appears unaware of the possible bad effects of reused water for bathing all her children.



In Narbada's family, the adults use twigs from mango trees to clean their teeth, but Narbada's little brothers use tooth brushes and tooth paste. The boys look healthy and more or less clean, but Narbada herself does not look strong. She says that she has to do most of the housework as her mother does not keep well.

There are no sanitary latrines in the village and the family go to the fields for defecation. Hands are cleaned with clay afterwards.

Cattle Shed

There is no separate cattle shed. The cattle are kept in one section of the big room in one of the structures. The room is divided by a two feet high mud wall. There are two cows and half a dozen goats. The dung is collected and taken to a compost pit.

Food and Sanitation

When Narbada is asked to make some lime juice, she makes it in an unwashed glass, without washing her hands. She throws the peels outside the house.

She says that the family eat pulses and wheat and a little vegetable. But they are too poor to have vegetables regularly.

Attitude towards the Camp

Narbada attended the camp without

telling her parents, and because the Anganwadi worker had told her she would learn sewing at the camp. When the Anganwadi worker was asked why she had given false information, she said that the women in the village were not interested in anything other than sewing and embroidery, so she used this piece of falsehood to draw the women into the programme!

Narbada feels now that the camp was useful and that she learnt a great deal about water, health, immunization, common ailments and sanitation. Although she is not in a position to change the practices of adults at home, she feels the camp has done her a lot of good and made her aware of many things she did not know about. But her father thought it was a waste of time, she says. Her mother appears quite indifferent and points out that women have a lot of work at home and in the field. When a three-day camp takes place in the village, if all the women go there, who will do the work?

1 This chapter is based on *Women Awareness Camps, an Impact Study,* Department of Home Science Extension Education, College of Home Science, Rajasthan Agricultural University, Udaipur, 1989.

13
Two villages: the project in operation

The case studies below were selected from a longer study undertaken in 1989 by research students from the Indian Institute of Management, Ahmedabad. As the project had just started operating in Udaipur at the time, the study covers the two districts where SWACH first began, Dungarpur and Banswara, and serves as a mid-project evaluation of achievements and failures of the project, primarily as a management exercise.

Five villages from each district were chosen for special scrutiny.[1] The basic components for the village studies were the incidence of guineaworm, stepwell conversion, handpumps, domestic and environmental sanitation, health and hygiene awareness and village contact drives.

Five of the villages had a totally tribal population, four of them were poorly connected by roads, three villages could be categorized as economically backward and three more were only partially developed. Eight of them were far away from the project office and of them, four belonged to remote locations. Two of the villages had no guineaworm cases at all, while four of them had high guineaworm incidence records. The first intensive awareness campaign had been carried out in these villages in September 1986.

The village studies led to some general observations:

- There was very definite decline in the number of guineaworm cases. The SWACH medical teams were known for quick response and patients voluntarily presented themselves for treatment. During treatment, the entire village gathered and this provided opportunity for the SWACH team to pass on information about the life cycle of the guineaworm and measures being taken for prevention and cure. The medical intervention for guineaworm had brought credibility to the project.

- The most tangible activity of the project was the conversion of stepwells. Once converted, it could be easily identified from a distance because of its cemented exterior and a smooth parapet. It was also something that clearly benefitted a number of people at a time. The benefits had penetrated enough for the communities to take initiative in identifying wells for conversion.

- Handpumps appeared to have been installed with a distinct bias in favour of poorer and backward areas. However, well water was preferred by everyone as handpump water was supposed to have a metallic taste. In tribal villages, where the pattern of settlement is scattered, the handpumps might be more in number, but less heavily utilized and often not

well maintained. In large villages with a mixed population, there was a higher density of population and handpumps were better maintained and promptly repaired when required.

- The handpumps also had attached to them cattle troughs, drainage channels for plantations and washing platforms. But not all the handpumps had proper drainage. The cattle troughs were poorly utilized and apparently had a design problem. Worst of all, there appeared to be no interest in the community to maintain these structures. Cattle troughs and drains were not cleaned often enough and water collected near some handpumps.

- The village contact drives had clearly had an impact on the school going population, who seemed to be aware of many of the health and hygiene priorities. As for the adults, all of them had information about guineaworm disease, but knew very little else about other aspects of health. The double-layered cloth filters from SWACH were still few in number and the villagers, reluctant to make their own filters, used old pieces of cloth to filter drinking water.

- The intensive awareness campaigns had reached even the very remote villages and conveyed the message effectively. However, the teams were expected to do so many different tasks that when it came to large villages, they tended to ignore the peripheral hamlets. One of the major plus points was the multi-media approach which attracted both children and adults. In villages with scattered dwellings, however, women were not contacted with as much zeal as they were in the more concentrated settlements.

The individual studies included here describe not just the positive, but also the negative aspects of the project effort. They might help to identify problems and gaps in project management in other similar endeavours.

One: Village Amarsingh-ka-Gara, Banswara District

With a population of 638 distributed in 120 households, the village was almost totally tribal in character. It had access to a paved road, but the nearest bus stop and post office were five kilometres away. The literacy rate was 8 per cent. There was no Anganwadi in the village, but it did have a primary and middle school. There was also a PHC sub-centre and an Ayurvedic dispensary. There were seven old handpumps, including two private ones. One of three stepwells had been converted by SWACH, which had also built one latrine, one washing platform, one cattle trough and improved the construction of five drains.

No cases of guineaworm were discovered during the first two village contact drives in 1986 and 1987. In 1988, however, the SWACH medical team visited the village when seven cases were reported in the May count. One of them was a tribal boy working on a Rajput's farm. He drank from a farm well as there were no handpumps nearby.

Situated near the Mahi river, the village was two kilometres from a larger settlement of upper caste households, where handpumps were the predominant water source. But for the tribals of this village, drinking water came from the three wells which were also used for irrigation, while washing and bathing were done in the river.

Wells

All the wells were located in the fields, where bullocks tied to wooden wheels drew water for irrigation in leather buckets, while drinking water was pulled by an iron pulley.

In 1987, the project approached a tribal, Tejia, who agreed to have his stepwell converted. He and six other villagers worked for 15 days on the conversion of the well in return for five kilograms of wheat per head per day.

A second stepwell belonged to Chhatar Singh, who could probably easily pay for the conversion work, but preferred to have the project do the job for him. The project refused, said Singh, because the expense for converting this particular well would far exceed the budget. A third stepwell was situated about 300 metres from the school and used by at least ten tribal families.

Handpumps

None of the seven handpumps in the village, including the two that

were privately owned, had been built by the project. Two of them were in the main settlement, one near a Rajput's house and another near the PHC sub-centre. Of the others, one was behind the school, one a little distant from it, and one at the edge of the main settlement, where the scattered tribal dwellings began.

The two handpumps in the main settlement and the one behind the school were the ones that functioned best. The one at the edge of the main settlement usually went dry after a couple of hours of use in the morning. This was because the number of riser pipes was not enough. Once the water level went down, it took many hours to recharge. One handpump did not work at all because its riser pipes had clogged, said the local mechanic, Bhagwati Shankar.

Shankar was trained by the project and worked part time as a mechanic for Amarsingh-ka-Gara and its surrounding villages. He went on his bicycle everywhere, to ensure that all the handpumps were in proper working order. He also learnt about breakdowns in the fortnightly Panchayat meetings.

The Rajput's handpump had been making a creaking noise for the past three months, the handle was wobbly and needed a lot of effort to work. Shankar shrugged it off. "It's bearing is broken, that's all. Nothing much can happen, except the axle might break. When that happens, I'll replace them both," he said calmly. This handpump was used about eight to 10 hours a day by the people living in the main settlement.

Environmental Sanitation

The project office reports mentioned a cattle trough constructed by the project. It could not be located by the study team. No one seemed to know anything about it. But the drains attached to the handpump platforms had been lengthened to channel the water away from it. Unfortunately, the handpump near the PHC sub-centre had too many houses near it and there was just no space for adequate drainage. The lenghtening of the drain had had no effect there.

A single block of two latrines and three urinals had been constructed by the project. The latrines had locks on them. The urinals looked as if they were being used.

A washing platform had been built at the handpump behind the school, but it needed to be bigger as the women used it in groups rather than singly, and those who could not fit in, went to the handpump platform for washing clothes and utensils.

The surroundings and interiors of the tribal homes were clean. There were no heaps of garbage or cowdung festering in the sun. The homes were swept and swabbed regularly.

Health and Hygiene

Everyone knew drinking water should be filtered. But that did not mean they did it the right way, or did it at all. Most homes used a single layer of old cloth to filter drinking water. When they went to work in the fields, most of them drank from the nearest well — they certainly did not filter the water. None of the tribal homes seemed to have the project's double-layered filter.

Soap was rarely used for washing or bathing. After defecation in the open fields, both hands and the mug for carrying water were scrubbed with clay. A few people used soaps and detergents from the solitary store in the village.

Village Contact Drive

"Clean is beautiful! Clean your teeth every day!" "Filter all drinking water! Abolish guineaworm disease!" Slogans adorned some walls in the main settlement.

The VCT had held a cultural show in the evening, after the village contact drive a year ago. Before sudden rain interrupted the programme, a puppet show and a play were staged on the land opposite a Rajput home. The children seemed to know the messages from last year's drive. A group of young boys promptly listed what they could recall:

- Filter all water before drinking.
- Keep the home and surroundings clean.
- Go to the doctor for curing guineaworm disease, not to the village quack.
- Do not bathe or defecate near the handpump.
- Do not leave food exposed.
- Eat while the food is still warm.
- Keep all utensils clean.

They also recalled the play they had seen, about a son-in-law from

the city, who was particular about drinking water. He explained the life cycle of the guineaworm to his father-in-law and urged him to use the hand pump and a proper filter. Waiting for the priest to attend a ceremony at home, the family discovered that the priest, who travelled in many villages, was infected with guineaworm. Now they would have to ask the priest not to enter the stepwells, as he might contaminate the water.

Obviously, the play had quite an impact on the upper caste community. It is not everyday that one talks of priests as a source of contamination, even if it is only because of a disease he has contracted by accident. However, despite the theme, the adult tribals did not remember the story clearly. They could hardly recall the village contact drive a year ago.

Two: Village Palthoor, Dungarpur District

A totally tribal village with a population of 872, distributed over 132 households, Palthoor w as poorly connected with the outside world, with an unpaved approach road, a bus stand and a post office eight kilometres away. Literacy rate was nine per cent. There was an Anganwadi and a primary school in the village, but no health care facility. There were two old handpumps, and five more were installed by the project. Nine stepwells in the village were converted by the project, which also built cattle troughs and washing platforms and improved the drainage near the handpumps.

"At one time not too long ago, almost every household had a guineaworm patient," said a villager. "Sometimes a whole family fell ill at the same time and relatives had to be called in to look after them." In September 1986, the first village contact drive had unearthed 93 patients. The project took immediate action, and the number was down to 10 during the drive in April 1987. In May 1988, there were six patients in the village.

Wells

With no river or pond in the vicinity, the villagers depended mostly on the stepwells. The project converted nine of them and despite the five additional handpumps installed by them, the wells performed a useful function in a community that lived in scattered habitations. Not all the wells were converted the same way, or according to the same design. A public well had a protective iron grill, while the private ones had a simpler and cheaper design.

Khatra and his brothers owned one of the converted stepwells. It was on their farm, a kilometre from his home. His brothers lived in a house near the well. The well had a low parapet and the inner walls were partially cemented. The steps were left as they were. Khatra entered the well every evening for a bath before going home. The well provided drinking water for his brothers' households and he too drank from it during the day. What was more distressing was that Khatra was a handpump mechanic who had led a VCT in the 1987 drive.

Handpumps

One of the two old handpumps in the village was next to a temple, a short distance from where the Sarpanch lived. There were less than five households there. The other was near Khatra's house in the interior of the village. The five handpumps installed by the project were very much in the interior, two of them in places till then inaccessible to drilling rigs. Coordinated by the Nehru Yuvak Kendra, a local NGO, a hundred young men, displaying tremendous community spirit, worked for 10 days to build a path that would

carry the drilling rig to the less accessible sites.

All handpumps in the village were in working order. Not surprising, since there were nine mechanics in the village, all recruited in 1981 by the government. The handpumps were mostly used in the mornings, but accessibility remained a problem, since the land was hilly and houses scattered. Nowhere was the density high enough to have a single handpump to serve a large number of people.

Environmental Sanitation

With no concentrated use of the handpumps, drainage was not a problem. The hilly area provided enough slopes for the moderate amount of spill to roll away. There was also enough open space for the water to evaporate after a while.

None of the homes visited seemed to be using any method to filter the water, except one, where the filtering was done with a single layer of an old piece of cloth, with no distinction made between the two sides when filtering.

Khatra's two-room house did not leave a pleasant impression. He lived there with his wife, his three children, 10 goats, a bullock and a few hens. The animals stayed in the inner room, which was also a store for grain, clothes and cots to sleep in. In summer, the family slept in the courtyard. In winter they used the front room, which also served as a living room and kitchen during the day. There were no windows, and a one-foot square opening above the stove barely allowed the smoke to escape. Dry twigs and dung cakes were used as fuel. Recesses in the walls were used as shelves, one of them for keeping the drinking water. Although the room was swept clean everyday, it was always full of smoke and the smell of animals.

Village Contact Drive

The VCT stayed in the Anganwadi during its two-day programme in the village, last time they were here. They visited every home in the village and organized a cultural programme in the Anganwadi courtyard. There were about 200 people in the audience. The children remembered the occasion very well. One of them gave a vivid description of the programme and they all seemed to have learnt the messages well and even understood them.

1 This chapter is based on *Managing Gutneaworm, Health and Water Supply, the SWACH Project of Rajasthan,* Anil Bhatt in association with Salil Dave, Indian Institute of Management, Ahmedabad, 1989.

14
Changing the perceptions of villagers in Udaipur

The toughest test of any project is how far it has succeeded in changing the attitude and perceptions of the people. As these are not elements that are visibly transformed over a short period of time, monitoring such change while a time-bound project is still operational, is a valuable part of any development programme. Much of the results are initially not positive, but monitoring helps to understand the social and culture specific problems that obstruct the desired change, and help to develop more suitable strategies for the future.

One of the many studies sponsored by SWACH in 1990 took a close look at this difficult aspect of the programme.[1] Although the results showed that the project was having a significant impact on prevention and cure of guineaworm disease, health care messages remained a challenge in these rural and remote areas where behaviour was dictated by tradition.

The results of the study suggested some general observations:

- The physical environment, particularly the accessibility of the village to outside communication was as important a consideration in the infiltration of new ideas and behaviour as were cultural precepts.
- There was a considerable number of hidden patients who had not been flushed out by the village contact drives and had not attended a medical camp. Among identified hidden patients, 40 per cent were children under 15 years of age. Some of the reasons were apathy, resignation or tolerance to the disease and sometimes even lack of information about a reporting system.
- More than economic hardship and permanent disability, pain and temporary disability were considered the important side effects of guineaworm disease.
- Nearly 80 per cent of the treated patients were tribals, even though the incidence of guineaworm was highest in the mixed caste villages. This might be due to the scattered character of tribal dwellings. By being located outside the main mixed settlements, it was possible that the tribal dwellings did not receive the full benefits of educational extension programmes or hardware interventions.
- Well water was mostly the first choice for drinking water, as handpump water did not taste as good to the villagers.
- Most mixed caste communities understood the significance of clean, uncontaminated drinking water. But the tribals seemed to look upon converted stepwells and handpumps as alternative ways of accessing or storing water.
- Maintenance and repair of all hardware interventions were perceived to be the responsibility of the government and not of individual users, owners, or the community.

Jalapka

Jalapka was a tribal village 92 kilometres from Udaipur city and 27 kilometres from the nearest all-weather road. Located at the end of a narrow forested valley, it had 165 scattered households. Income was mostly generated from agriculture, but only six per cent of the land was cultivated. Corn, rice, pulses, wheat and millet were grown seasonally. No crops were grown in summer because of the acute shortage of water. Most families raised goats for extra income. Migrant labour was another source of supplementary income.

There was a single primary school in Jalapka; older children walked seven kilometres to the nearest middle school. Most of the adults in the village were illiterate.

There were over 80 water sources in Jalapka, including natural springs and small pits. Twenty-four wells

and 10 handpumps provided water for irrigation and drinking. Drinking water was mostly collected from the 15 wells converted by the project.

In 1988-89, among the SWACH treated tribal villages, Jalapka was one of the 10 tribal villages with the highest incidence of guineaworm. In 1990 there were no reported cases of guineaworm here. Jalapka had 12 medical camps between 1988 and 1989. Other than converting 15 stepwells to draw wells, the project installed one handpump and constructed washing platforms, cattle troughs and improved drainage for two more existing handpumps. Filter cloth was distributed in the village, but by 1990 they were no longer evident. Everyone claimed that they filtered drinking water, but many of them were seen not to do so. Also, the filters available were just old pieces of cloth, discoloured with use.

Kurdau

Kurdau had a mixed population of mostly Rajputs and tribals, the latter forming 42 per cent of the total. Located 10 kilometres away from the Udaipur-Gogunda road, the village straddled the Ruparoli, a seasonal stream. Thirty-six per cent of the village land was cultivated, of which 28 per cent belonged to the tribal families. Corn, rice, wheat, pulses and mustard were grown here, but not in summer when irrigation became a problem. Agriculture was the main source of income and, as with Jalapka, in Kurdau too, migrant labour provided supplementary income.

In 1990, Kurdau had a primary school where 66 per cent of the girls and 73 per cent of the boys came from Rajput families. For the adults, the literacy level was either very low or non-existent.

Between 1988 and 1989, 35 per cent of the villagers were infected with guineaworm — one of 10 highest scores in the mixed villages of the district. Of the patients, 70 per cent were tribals. In 1990, there were no reported cases in Kurdau. Kurdau had 28 water sources —25 wells, 2 handpumps and the seasonal stream. Of the wells, 18 were stepwells, 15 of which had been converted by the project. Both the handpumps were installed by the Panchayat Samiti in 1987. In 1990 only one of them was still working.

SWACH held 18 medical camps and one awareness camp in the village between 1988 and 1989.

Water and Guineaworm

Only eight of 79 households interviewed in the two villages could say anything about a system for reporting guineaworm cases. All eight households belonged to Kurdau. Four of them had patients who were called to attend the medical camps after someone came and made a list of patients in the village. However, they knew nothing of a postcard reporting system or a particular person in the village who was responsible for reporting guineaworm cases to the medical team.

Of the patients interviewed in Jalapka, only 38 per cent said they had stopped work completely because of guineaworm. In Kurdau, however, almost all the patients interviewed stated that they had stopped work completely for at least 30 days before being treated. After treatment, they were back to work within 10 days. Many of the patients were aware of the loss of income and productivity that resulted from the disease.

Most of the people interviewed appeared to know that guineaworm disease spread through drinking contaminated water from stepwells that had not been converted, although they were not so clear about the life cycle of the guineaworm. After the medical camps, many households in Jalapka started using handpumps for drinking water, something that they never did before. In Kurdau the tribal population continued to depend on the converted stepwells, mainly because they preferred the taste of the water and because the handpump was situated far away from their dwellings.

Information about Guineaworm

In Jalapka, 43 per cent of the respondents said that guineaworm could be prevented if water was strained before drinking. Only a very few people stated that reliance on handpump water prevented guineaworm, while another small number claimed that prevention could be achieved if no one entered a stepwell. In Kurdau, on the other hand, almost everyone knew that filtered water and handpump water could prevent the spread of guineaworm. In Kurdau, both tribals and non-tribals were aware that there were less number of cases

of guineaworm disease in 1990 because of the SWACH package of medical treatment, conversion of stepwells and handpump installation. In both villages, however, almost everybody knew that guineaworm was a very old disease, present in the community for generations.

At the Water Source

In Kurdau, there was general sense of satisfaction about the workmanship of the converted wells. It was also felt that the converted wells stayed clean, while the stepwells were open to all kinds of surface dirt and contamination. In Jalapka, half of the owners of the converted wells complained about the workmanship and stated that parts of the walls of three wells had already caved in. They also grumbled about having to buy rope and bucket to draw the water. But they all agreed that the wells were cleaner now and free from guineaworm infection.

All handpump users were convinced that "government" was responsible for the maintenance and repair of the handpumps. Among the users of wells, most people felt that the wells ought to be looked after by the owners, although a few did say that either the "guineaworm people" or the "government" should be responsible for the work they had done. Most of them knew that the users of wells should be the ones to keep the wells clean. By this they meant that the wells should be kept free of run-off, soap, dirt and refuse while they were being used, but drainage facilities should be provided by the "government". They agreed that unlike wells, handpumps could not be contaminated as they were a "closed" water source.

Being unused to pulleys, many of the respondents said they did not find the converted wells convenient to use, but accepted that conversion was a good thing. Most respondents felt that handpumps were particularly useful during the summer days when the wells ran dry. Prevention of guineaworm was not seen as the primary advantage.

Is there a Cultural Perception of Water?

The study found no consistent trend in the villages to indicate such a phenomenon. The responses represented personal opinions and preferences or family rules, primarily based on accessibility and taste. In fact the knowledge that guineaworm disease could be prevented through control of the water source appeared to have had secondary importance in their lives.

Defining the Boundaries of Intervention

For urban development planners, it may be difficult to understand how a population that has suffered pain for generations because of guineaworm could have taken it with so much equanimity. Yet, the study makes it quite clear that the concern for change came from outside and was not perceived as a felt need by the community until the outsiders came. This phenomenon may be common to the rural poor of all developing nations, where survival takes up so much of the people's time and energy, that unless a disease is perceivably life threatening, it will be borne with fortitude and even apathy. It is a factor that any development intervention effort must take into account.

This study, therefore, had based its explorations on a set of assumptions that would control the analysis of its findings and put the concept of change in the correct perspective:

- That persons who are living a marginal existence largely dependent on environmental

conditions for their welfare, often do not differentiate between cure and prevention or the seriousness of various illnesses. This is not to say they do not have the information, but rather that cultural and/or economic priorities often supercede attention for effective treatment.

- That access to water sources is often based on local social or political decisions of purity and pollution. These values are attributed to individuals in varying degrees according to age, sex and community.

- That there is every possibility that the dynamics of who receives treatment for guineaworm disease may depend on age and sex within the pressures of local social interaction and perceptions of who needs treatment. Decision-making about one's personal health is not always an individual's own decision.

- That choice of particular drinking water sources is not assumed to be a decision of distance or convenience, but may include qualitative variables of taste, habit or ownership.[2]

The validity of these assumptions is universal, and can form the foundation for similar explorations in any community of the world where there are people suffering from the ravages of guineaworm disease. ❑

1 This chapter is based on *Village Study on Water Use and Perceptions and Statistical Profile on Treated/Reported Guineaworm Patients and Villages,* Chris Deegan, UNICEF, Udaipur, 1990.

2 *Village Study on Water Use and Perceptions and Statistical Profile on Treated/Reported Guineaworm Patients and Villages,* Chris Deegan, UNICEF, Udaipur, 1990, pp. 10–11.