

Third World Issues

The Mandwa experiment, an alternative strategy

N H ANTIA

Introduction

India and China both have limited resources for health care yet the infant mortality rate in China is about 40 while in India it is about 30. Even within India there are considerable differences between states: the infant mortality rate in Kerala, for example, is 42 while in Uttar Pradesh it is 177. These figures suggest that there is potential for improving health care in India using resources that are already available.

In the early 1970s a study was set up to look at the health problems of a rural community in Maharashtra state and explore ways in which the available medical technology could be applied. The study area, which comprised 30 000 people living in 30 villages in the Raigad district of Maharashtra state, was chosen as roughly representative of the Indian population, three quarters of whom live in rural areas.

The project, known as the Mandwa experiment, ran from 1973 to mid-1983. This article describes how it was set up, what was achieved, and the difficulties that were encountered.

The study

The first two years were spent looking at the structure of the community and the health problems of the people and ascertaining how the existing public and private health services worked.

The political and economic control of the community was held by a few leaders. The rest of the population were poor, and their main concern was to provide the next meal for their family. There was no interest in preventing disease, and ill health was tolerated until it prevented the bread winner from doing his job. Early detection of disease and continuity of treatment—let alone prevention—were luxuries that these people could not afford. When they did seek medical care they sought quick relief of symptoms—an injection or a bottle of tonic.

The most common health problem was malnutrition, which with the poor water supply, standard of hygiene, and the sheer strain of having to survive took a heavy toll on a population who viewed chronic illness as normal.

Despite their poverty, however, the people occasionally had to raise large sums of money for emergency treatment—for example, for obstructed labour, accidents, or severe dehydration. To do this they often resorted to the money lender.

EXISTING SERVICES

The government primary health care service consisted of two subcentres and a dispensary with 10 beds. These units were understaffed, and the doctors and nurses were primarily concerned with providing curative services for the leaders and rich members of the community. The only government health programme that was implemented with any success was family planning, and the measures used to publicise this programme were

resented. Most people equated health care from the government primary health centre with a drive to meet strict government targets to restrict the size of their families. They did not believe that health centres had a commitment to maintaining the health of the community. Access to health care facilities was limited, because people seldom visited the district hospital, which, although only 15 km away, was inaccessible to most because transport was inadequate and expensive.

Despite these problems, there were some hopeful signs: though illiterate and oppressed, the people showed a remarkable intelligence in using their meagre resources. The commonest diseases were communicable ones that were easy to diagnose and could be cured or prevented with simple, cheap, and safe measures.

The doctors conducting the study realised that instead of classifying diseases on an anatomical or pathological basis it would be more logical to grade them according to the amount of knowledge, skill, and technology required for diagnosis, prevention, and treatment. Conditions were grouped into the following categories:

Group 1—Minor illnesses and injuries that the people usually looked after themselves with local remedies.

Group 2—Diseases that caused morbidity but did not endanger life—for example, scabies, impetigo, worms, minor gastric upsets, and diarrhoea.

Group 3—Life threatening and maiming diseases, such as tuberculosis, tetanus, dehydration due to severe diarrhoea, dysentery, measles, acute respiratory infections, poliomyelitis, and leprosy.

Group 4—Serious conditions, such as obstetric emergencies, cancer, heart disease, stroke, and major trauma.

If the problems in each group were not treated adequately and in time they might, of course, escalate to the next group, but generally, it was thought that conditions in groups 1-3 could be diagnosed by people with few skills. As there was no hope of providing any specific services for this poor community in the foreseeable future, through either the public or the private health sector, we decided to find out whether the villagers could be taught simple medical skills that would enable them to look after their own health and use the existing medical services to greater effect.

TRAINING PROGRAMME

Most of the health problems were related to maternal and child health, so a local woman motivated to serve her neighbours was selected from each village. Most of these women were semiliterate so training consisted of informal weekly discussion groups that took place in the village.

The training was practical and took account of the conditions in which the women would work. Very few teaching aids were used, and the well, pregnant, and ill people of each village provided enough material for practical teaching. The germ theory was taught with a magnifying lens and a simple school microscope, using water from the local well, smears from lepromatous patients, and sputum from tuberculosis sufferers.

The biggest task was finding a suitable teacher from among the skilled health professionals—one who could convert complex theoretical knowledge into simple practical know how and, above all, who could overcome cultural barriers and distinguish between intelligence and education and respect the practical approach of village folk. The teacher also had to be prepared to forego urban life and adjust to the villages.

Despite offering a good salary we had difficulty attracting a suitable candidate. Most doctors and paramedical workers did not believe that a village woman could acquire knowledge that they themselves had taken two to five years to assimilate. The idea of teaching illiterate local women was considered to be dangerous by some and at worst an attempt to institutionalise quackery. The arduous task of spending most of the day on a

motorcycle visiting villagers (and receiving no payment from them) rather than running a traditional static outpatients service was a further disincentive. Eventually, however, a doctor was found who was prepared to take up the post. He was a young ayurvedic physician, the son of a local fisherman, and what he may have lacked in medical skills he made up for by his acceptability to the people. The rest of the project staff were also chosen from among the local people except for the administrator who also worked as a community organiser.

The project established a small health centre with 10 beds, which was used chiefly for obstetric care and emergency treatment. All activities were carried out daily or weekly, including immunisation of children and pregnant mothers, family planning, and detection of malaria, tuberculosis, and leprosy. No camp or mass approach was used.

The cost of the service (excluding the research input) was about Rs 6 per head per year in 1980 (£1=18 Rs). Of this, the cost of medicines was about Rs 3, which could be recouped from the patients. (The expenditure on health per person in India in 1979-80 was Rs 36.¹)

It took about three years to establish the project. As the village health workers became experienced many were able to take over the role of the trained auxiliary nurse midwives (part of the existing government medical service team) and eventually replaced them at the subcentres in the last three years of the project. They also learnt to give immunisation injections and streptomycin for tuberculosis.

Results

A preliminary survey showed that the health and economy of the study area were similar to those of the country as a whole, and hence the national statistics were used as a baseline for comparison (see table).

Health figures for the whole of India compared with those from the Mandwa project

	Mandwa project 1982	National figures 1981*
Birth rate	15	33
Crude death rate	8	12.5
Infant mortality rate	74	127
Immunisation (%):		
Triple antigen	92	28
Polio	67	
Tetanus toxoid	78	

*Source: Central Bureau of Health Intelligence, Government of India, New Delhi, 1983.

IMMUNISATION

Appreciably increased immunisation rates were achieved, but this was only after the village health workers had replaced the auxiliary nurse midwives. This with better hygiene at deliveries resulted in the total elimination of tetanus—the second largest cause of death in India.

LEPROSY

The number of cases detected by government leprosy technicians before the project was 63 over 12 years. At the end of the project this had increased to 161 in the same population, and the village health workers' ability to screen for leprosy was similar to that of the trained leprosy technicians. Moreover, all the cases detected by the village health workers were of early disease. Treatment ensured that there were no new cases of deformity. The village health workers visited patients with leprosy in their homes on a social as well as a professional basis, which virtually abolished the stigma that had previously been attached to these patients. Deformed patients were reaccepted by their families and the community.

TUBERCULOSIS

The rate of early detection of tuberculosis was high, and by visiting the patients regularly at home the village health workers ensured that treatment with streptomycin was given once the doctor had confirmed the diagnosis. The importance of treatment in preventing transmission of disease within the family was explained, and preventive measures such as isolation of an infected patient within the home and disposal of sputum were emphasised.

GASTROENTERITIS

Deaths from dehydration were virtually eliminated by explaining to mothers how to use oral rehydration, using a homemade salt and sugar solution. More importantly, preventive action such as the cleaning and chlorination of wells and boiling of water prevented the spread of epidemics.

MALARIA

The village health workers took blood smears from patients with fever and then presumptively treated them with chloroquine. Definitive treatment was provided for patients who yielded positive results on smear testing. The local community helped to tackle the problem by spraying insecticide over areas that attracted mosquitoes.

Discussion

We have the knowledge and the tools to prevent and treat most of the diseases that affect people in developing countries. Furthermore, this may be achieved by using simple, cheap, and safe methods. The experience from the Mandwa project suggests that semiliterate and even illiterate villagers can be taught not only to prevent disease but also to recognise and treat it effectively. The question then arises as to why such a cheap and effective community health service is not implemented nationwide, particularly as it is in keeping with the recommendations of the Bhore report,² the report of the committees of the Indian Council of Medical Research and the Indian Council of Social Science Research,³ and the National Health Policy. The answer may in part be explained by referring to some of the problems that the Mandwa project encountered.

PROBLEMS

When the project first started the director of medical services of the state requested that it should take over the functions of a primary health unit, and expressed the hope that this would form a prototype for the development of a similar service throughout the state. Locally, the community leadership welcomed us, although their interest waned when they realised that the project was not going to provide a hospital and an ambulance—services that were their priorities.

The effectiveness of the village health workers varied from village to village, because in addition to their own ability and motivation the amount of support they received from their village leaders varied considerably. Repeated pleas to the leaders to form a health committee met with little interest. In part, this may have been due to the influence of the existing medical officers and paramedical staff, who were often hostile towards the village health workers. The village health workers themselves were given insufficient credit for what was obviously a highly successful record.

There was less opposition from the nine practitioners of indigenous medicine who worked in the area. This was because those patients who preferred traditional healing methods continued to patronise them. Many had implicit faith in the "injections" given by the practitioners, although most were of dubious value—chloramphenicol and vitamins for the common cold, for example.

Despite many of the poor people and some of the leaders accepting the project and appreciating its services, there was considerable opposition—not least from some of the leaders, who saw the success of the project as a threat, and the government health services. Hostility escalated and culminated in a demand that the project leave the area and hand over its assets. That this was effected without active opposition from the poor, who were the beneficiaries of this improved health care, reflects their dependence on the local power structure for survival.

Conclusion

The Mandwa project showed that semiliterate village women could be taught to improve the health of their own community

and achieve better results than the officially appointed health professionals. Many of the health targets set for 1990 were achieved without incurring the expense of providing a new water supply, additional food, or new sanitation methods—the total cost of the project being about Rs 6 per head per year.

The Mandwa project also showed that the interest of the health professional does not always coincide with the interest of the people. The professionals prefer to retain power over the local people and keep medical treatment shrouded in mystery. Moreover, it seems that few trained health workers, however well intentioned, can discriminate between education and intelligence and hence establish a rapport with the local people.

Perhaps the reason that the Mandwa experiment and other similar projects remain isolated experiments that have had little impact on the health service of India lies in the opposition from the people who hold the power in rural communities. Resistance to anything that changes the status quo is considerable.

This seems the only explanation for the fact that almost four decades after independence half the population in India remain below the poverty line, 30 of every 1000 children who are born die within the first year, and diseases that can be prevented and controlled continue to take their toll. It may also explain why, despite there being a school in every village, about 60% of the population (75% of women) are illiterate. This is profoundly important for the link between female literacy and health is clear: in

Bihar and Uttar Pradesh where female literacy is 14%, the infant mortality rate is 177. By comparison, in Kerala female literacy is 65% and the infant mortality rate is 42.

Sadly even well intentioned doctors see health as an isolated problem rather than as a subsystem of the social, economic, and political structure of the country. Even with the best of intentions most voluntary agencies with their purely humane approach often help to create an even greater dependence among those whom they serve.

The Mandwa experiment may either be seen as a failed community health project or as an experiment that shows that simple knowledge and technology can help poor people to overcome their fears and develop self reliance. Before health can be improved appreciably, however, education, especially of women, must be improved. Furthermore, the economy must be developed and the political will generated to effect change.

References

- 1 Centre for Monitoring Indian Economy. *Standard of living of the Indian people*. Bombay: Centre for Monitoring Indian Economy, 1984.
- 2 Health Survey and Planning Committee. *Report*. New Delhi: Government of India, 1946.
- 3 Indian Council of Medical Research and Indian Council of Social Science Research. *Health for all: an alternative strategy*. New Delhi: ICMR and ICSSR, 1980.

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Clinical Topics

Immunisation of preterm infants

We received this letter from Dr S Lingam and colleagues in the Department of Child Health, Redbridge Health Authority, Children's Centre, Barkingside IG2 6YG, and asked four people to respond to it.

The value of routine immunisation against diphtheria, pertussis, tetanus, and poliomyelitis is well known.^{1,2} At present in the United Kingdom primary immunisations are started at age 3-4 months, but there are no firm guidelines for the timing of the first injection in preterm infants. We therefore asked paediatricians with special interest in the care of the newborn to state their own practice.

The British Association for Perinatal Paediatrics allowed us to send questionnaires to its members asking them to state their current practice in immunising preterm infants. We sent out 167 questionnaires and received 105 (63%) replies.

The results showed that 33 (31.5%) recommended that immunisation start at 3-4 months, making no allowance for the preterm birth; 39 (37%) recommended immunisation after full correction for the preterm birth—that is, 3-4 months after the expected date of delivery; and 33 (31.5%) recommended immunisation after half correction for the preterm birth.

The American Academy of Pediatrics states that: "DPT (diphtheria, pertussis, and tetanus) and OPV (oral poliovirus vaccine) can be administered to prematurely born infants at the appropriate chronological age. If the infant leaves hospital at 2 months of age both DPT and OPV can be given on discharge or at 2 months of age."³

A study of antibody response in preterm infants immunised at 2 months against diphtheria, pertussis, and tetanus showed that protective antibody levels were not produced until after the second injection.⁴ Thus early immunisation is important. There was no

increase in side effects; only 15% of preterm babies needed antipyretics compared with 54% of term infants, and no convulsions, collapse, or apnoea were seen. The preterm infants were given the standard dose of 0.5 ml of diphtheria, pertussis, and tetanus vaccine.

A second study showed that after the second injection with diphtheria, pertussis, and tetanus vaccine 100% of preterm infants developed antibody to diphtheria, tetanus, and pertussis, and the incidence of side effects was again low.⁵ It thus seems that preterm infants can safely have their first immunisation from 8 weeks after birth without correction for preterm birth, and immunisation for them should start at 3-4 months, as for babies born at term.—SUNDARA LINGAM, CHRISTINE MILLER, JANE PATEMAN, and RICHARD BEAVER.

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When answering questions on immunisation from colleagues I have been impressed by the lengths to which they will occasionally go to find either a contraindication to giving a routine vaccine or some reason for putting it off. If we are to attain "Health for All" by the year 1990 it is important that we do not allow spurious contraindications to interfere with achieving the high vaccination rates required in infancy. Although I tend to encourage vaccination if at all possible, the issue of prematurity has found me unusually vacillatory. The evidence suggests that chronological age is more important than gestational age for antibody response, but the guidelines of the Department of Health and Social Security¹ and the World Health Organisation² do not give guidance on the issue. As 5-10% of babies are preterm or of low birth weight even in this country, the problem may be a sizable one. Because the chances of