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Epidemiology, anthropology and health education

Epidemiology gives only a partial picture of a health problem. Without a knowledge of social, cultural, and economic conditions as well, one can fall into farcical errors in designing interventions.

It is usually difficult to determine precisely the place of health in development projects. In most cases it is still the poor relation of the bulldozer revolution (1). At the root of this problem is often a lack of knowledge both of the epidemiological patterns of the predominant diseases and of the sociocultural structures that govern attitudes to health in the populations concerned. A survey taking these factors into account was therefore undertaken in a hydroelectric project in Cameroon with a view to providing a general framework for the activities of the health team working on the spot.

In 1982 a large dam was built on the Bénoué River in the north of the country, creating a reservoir of over 500 km². The filling of this reservoir has inevitably upset the ecosystem and produced a redistribution of population. Displacement of the local population caused by the rising of the water was succeeded by migratory movements from the extreme north of Cameroon and

from Chad and Nigeria. The migrants, attracted by opportunities for fishing, have settled round the new lake in a region that was previously sparsely populated. The area's economy now depends almost solely on fishing.

The health care system was no longer adequate to meet day-to-day needs or to monitor the major endemic diseases. Confronted with this situation, the area authorities decided to re-evaluate the problems, particularly that of schistosomiasis, a recrudescence of which is traditionally associated with hydraulic schemes.

The principles of schistosomiasis control are simple, being based on the well-known life-cycle of the parasite, which it is theoretically possible to break in various ways, among them mass treatment and elimination of the intermediate host, and environmental sanitation (2, 3). In practice, the implementation of these methods raises innumerable problems, and very few control programmes have proved capable of seriously reducing the prevalence and incidence of schistosomiasis.

An epidemiological survey was carried out in 1986. It covered a sample of about 1000

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people chosen at random in 15 villages. The quantitative laboratory methods advocated by WHO were applied (urine filtration and use of the Kato thick-smear test to examine stool samples).

A socioanthropological survey was carried out simultaneously in certain villages considered to be representative of the area. It consisted of interviews to collect general information on sociocultural structures, people's perceptions of health and disease, and the extent to which people understood the educational imagery used.

The epidemiological survey

Excreters of eggs of schistosomes responsible for the urinary and intestinal forms of the disease were detected in all the sample villages. Overall prevalence rates were 26% in the case of urinary schistosomiasis and 15% in the case of Manson's intestinal schistosomiasis, with ranges of 7–35% and 7–29% respectively (4).

Of the egg excreters 70% were under 20 years of age. No correlation was observed between infection and clinical signs, which in any case were not very marked. The fact that the area has only recently been developed may be the reason for the present paucity of clinical manifestations, which could very well become a much greater source of concern in the future.

Dangerous sites and the groups at risk

The survey indicated the places where prevalence is high and the communities and age groups most seriously affected. It was found that the three high-prevalence villages (over 30% of the population excreting *Schistosoma haematobium* eggs) were of large size, comprising over 200 inhabitants from several tribes, and had primitive

environmental sanitation. These criteria (large size, several tribes, poor sanitation) can therefore be used to single out quickly the villages at risk, where case detection should be carried out first. Furthermore, it is the population of both sexes under 20 years of age that is the worst affected and should be given the benefit of specific treatment.

Rapid method of case detection

The detection of schistosomiasis with reagent strips that react to traces of blood in the urine, a sign highly indicative of the disease, has already been recommended on several occasions (4). The survey made it possible to lay down requirements for the use of this simple and rapid method, bearing in mind the features of the area. Its sensitivity and specificity vary with the prevalence and intensity of the infection. At a prevalence above 30% in the case of urinary schistosomiasis this form of detection is adequate and justifies treatment without parasitological examination.

After picking out high-risk villages, the health staff could use this method for rapid case detection, thus reducing to a minimum the manifold difficulties linked to parasitological examinations in an area where travel is arduous and mainly by boat.

Effective easy treatment

The presence of two schistosome species in the same environment and, above all, the sometimes high proportion of mixed infections (up to 20%) suggest the advisability of treating patients with praziquantel, which is effective against both *S. haematobium* and *S. mansoni*. The fact that it can be administered in a single dose without special medical supervision eases the task of a health team that has to survey several



Setting up a field laboratory in the village of Liferi.

villages in a short time. Its short-term effectiveness was confirmed in one of the villages studied. For the moment, the only factor limiting its use is its high cost.

Schistosomiasis cannot be dissociated from the other health problems of a community, but an approach primarily designed to deal with it can promote the development of certain activities of much more general utility. For example, good sanitation and a system of epidemiological surveillance are relevant to all communicable disease control activities. Moreover, the systematic gathering of information may provide considerable encouragement for primary health care workers, because it shows them what progress they are making.

The anthropological approach

However, the findings from the epidemiological survey provide only a partial picture of the schistosomiasis problem, since it is impossible to work out a health strategy involving community participation on the basis of data unrelated to social, cultural,

and economic conditions. Certain types of behaviour and certain values must be taken into consideration in order to reconcile the way in which the community looks at things with the notions (usually epidemiologically based) of the experts. From that standpoint, the study of the human environment provides an essential link between the community as it really is and the picture of it

presented by epidemiology (5).

Our purpose was to study the people's knowledge of health and their day-to-day health practices and to gauge the extent to which it would be possible to establish a community-centred system for the monitoring and prevention of schistosomiasis. Our survey therefore concerned itself with the perceptions and types of behaviour of a village community in regard to health and disease. To that end we elicited information on the system of symbols used to describe perceptions and on the socioeconomic and cultural system.

The final aim of the anthropological survey was to devise relevant educational messages and practical educational tools. It was therefore supplemented by an analysis of an educational message of the type usually suggested and an evaluation of its impact on the understanding of the villagers.

Newness of the settlements

The two main characteristics of the population are the number of different tribes

represented (mainly the Kotoko, the Mundang, the Fulbe, the Tupuri, and the Jukun) and the provisional nature of the settlements around the lake. Villages are encountered that are composed of three to seven groups of different origin.

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The transitory nature of the situation is seen in the villages, which are not built on a concentric plan, and in which there is no visible demarcation of family or lineage groups. The dwellings are made of plaited straw; wattle-and-daub huts have recently appeared in villages situated on transit or trade routes.

Being a migrant brings in its train a whole range of psychological, social and economic disturbances that can have a considerable impact on health. For example, some of those who live round the lake are in the position of having broken the law, often by not having paid their taxes or bought a licence to use a motorized canoe for fishing. There is almost no supporting infrastructure, not even any schools for the children. Fishing is the occupation in which everybody is engaged, apart from the growing of a few food crops. Contact with the outside world is tenuous; buyers come into the villages for fish, which they resell on the wholesale market.

Perceptions of schistosomiasis

When asked about schistosomiasis the villagers usually ascribed the infection to the drinking of water from the lake or to an act

of sexual intercourse. Sometimes the idea was put forward that the "microbe" made its way up the stream of urine when somebody urinated in the lake. The Kotoko tribe associates urinary schistosomiasis, which it calls "the disease that turns your urine red", with overexposure to the sun. For others, symptoms of schistosomiasis are a pain in the lower abdomen, pain during micturition, very often white urine (urethral discharge), and sometimes red urine. The possibility of transmission by a vector, let alone by an aquatic snail, was never mentioned. Sometimes people spoke about other contagious diseases associated with overcrowding. Gross haematuria is not necessarily associated with an idea of abnormality; in women it may be ascribed to menstruation.

Schistosomiasis, therefore, is not strictly associated with water or with urination. In the majority of cases the same terms cover not only schistosomiasis but the symptoms of other urinary infections as well, whether specific or not. As for intestinal schistosomiasis, it does not seem to be perceived as a separate entity but forms part of the category of diarrhoeal diseases. The investigator is clearly confronted with a system based on signs and symptoms and not on any causal agent; indeed, the diseases concerned all give rise to genitourinary symptoms.

A similar logic can be applied to prevention; the only type of waterborne transmission mentioned was infection by mouth through the drinking of water from the lake. The villagers often spoke of boiling or filtering the water, measures classically advocated for countering all kinds of faecal contamination, a concept that brings together ways of preventing a whole range of conditions, of which, unfortunately, schistosomiasis is not one. In this particular case, therefore, an educational message, if it

is to be relevant, will have to emphasize first and foremost the possibility of contracting schistosomiasis through mere contact with lake water.

More generally, any schistosomiasis control campaign, if it is to be seen as effective by the villagers, should be an amalgam of measures designed to bring about an improvement in the whole range of urogenital and intestinal diseases.

Natural functions and environmental hygiene

Excreta are connected with notions of “dirt”, “stink”, and waste; it is generally considered a serious break of the rules of decent behaviour to urinate or defecate near the space set aside for eating. Among members of the Mundang tribe, urination or defecation in the lake is also prohibited—this is an ancestral injunction—since water is drunk to give one strength and if it is soiled with excreta, which are perceived as something “bad”, it will not fulfil that beneficial role. The Fulbe consider that it is shameful to be seen excreting; for that reason they use latrines built in the compound. When they are far from home they relieve themselves out of sight of anyone else.

Some groups adopt an attitude of modest concealment in regard to the natural functions. Others seem to be more sensitive to the notion of domestic space, where activities concerned with food and the preparation of meals take place. They also, therefore, urinate and defecate away from the cultivated or inhabited areas, but for a different reason.

Here again, an educational message will be more effective if it takes such nuances into account—in the one case a place that is

hidden away, in the other a place at a distance from dwellings and fields.

Awareness of illness

In conversations, illness in general was most often linked with pain. The more intense the pain, the more serious the illness. The pain was always localized in a part of the body that could be designated. These findings fit in with the concepts of modern medicine; the diseases are of the nature of “physical” ills. It is of course essential to bear in mind the possible coexistence of a different concept of illness, related to the perception of the world and the cultural beliefs peculiar to each tribe. Thus, from the viewpoint of the standards of modern medicine, schistosomiasis does not appear as a threat to life. Other diseases with more glaring symptoms are listed before schistosomiasis in order of importance and must be given a higher priority in an integrated control programme.

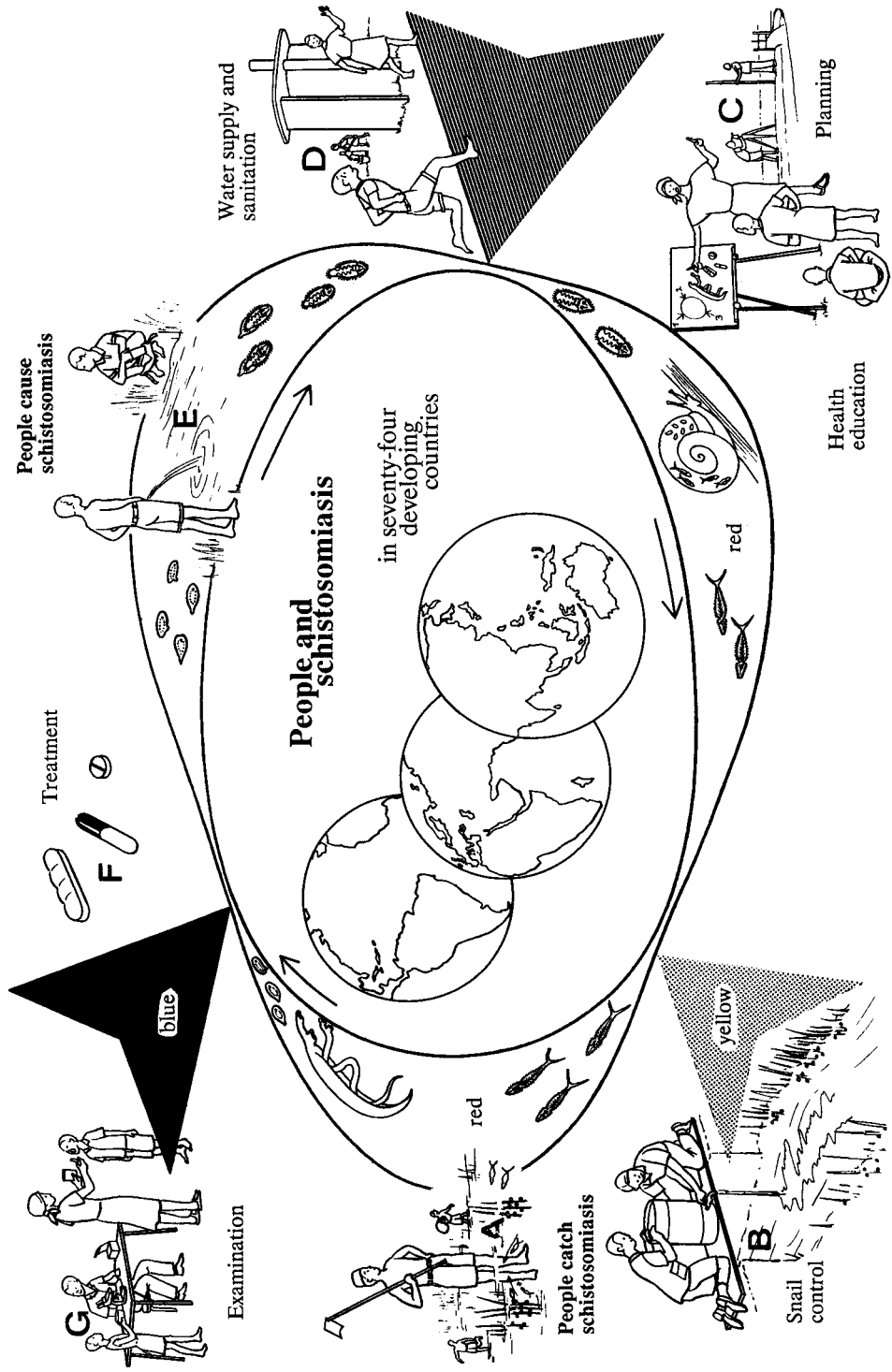
Modes of treatment

Two types of treatment for schistosomiasis are possible. The first, ordinarily used by the Kotoko, is traditional, the remedy being a macerated mixture of ingredients known to

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all. The second involves attendance at a health centre. Very often both procedures are used simultaneously, either to double the chances of success or because one is useful in a way that complements the other, tackling two aspects of the pain felt.

The schistosomiasis parasite cycle



Traditional medicine and modern medicine are not felt to be in competition.

The educational message

An educational message may be passed on through the medium of words, images or demonstrations. In this article the focus will be on a single educational device, the illustration shown in the figure, which represents the schistosomiasis parasite cycle (6) and is typical of many educational posters. The figure needs interpreting at several levels: (1) schistosomiasis as a global problem, (2) the importance of the vector, and (3) the means of breaking the cycle. This first step is already in itself quite complex.

Some fundamental issues must, moreover, be raised concerning the intelligibility of such a message in the context under study. A thing must have been seen at least once in one's life before one can possibly know what it is. Thus:

- at A, the man was generally considered to be a farmer in his field holding either a hoe or a flag, since few of the local population had ever seen a ricefield;
- at B, the application of a molluscicide is something unknown, and, whenever a villager could provide an interpretation at all, he said that the two people were drawing water;
- at C, the theodolite was often taken to be a camera, though a few people who had worked on road construction recognized it for what it was;
- at D, the latrines were often taken to be dwellings, but in most cases people could not say what the drawing was supposed to represent;
- at F, it was very rare that anyone could interpret the image;
- at G, those who identified the microscope had attended a health centre and undergone tests.

The notion of scaling down sizes may be difficult to grasp in some cases, although a person drawn smaller than life size is rapidly picked out to represent a real man by those who have already come across pictorial representations. On the other hand, the drawing of the globe is really unintelligible. Questions on these matters revealed considerable mystification. Thus:

- at F, when anything at all was perceived in the drawing, the villagers thought



Health education in M'Bengui village, using a WHO colour poster.

they were looking at boxes or “cattle medicines”;

- at A, the cercariae were taken to be lizards or toads or else not designated at all.

Conventional perspective is a mode of representation that is obviously not

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understood by all. The notion of successive planes does not exist. A person drawn smaller than another is taken to be a child rather than a more distant adult. Thus:

- at D, the person in the foreground was taken to be looking into the bucket in the background.

Colour does not always provide supplementary information. Thus:

- at A, B, and E, the blue of the original figure was not taken as representing water;
- at E, the red colour of the urine was never referred to.

It would therefore seem difficult to envisage an educational message based on representations of this type in the case of a population not used to perceiving what is meant by images.

The difficulty of designing a sequence of images that would take into account all possible hindrances to understanding means that images must be supplemented by previously explained gestures,

demonstrations, and so on. The primary concern should be to pass on simple messages corresponding to real concerns. It is not certain that the understanding of a complex process like a parasite cycle is really necessary. It might be advisable to lay emphasis rather on matters that can be spontaneously understood or, if they are not yet understood, are related to a problem that has been raised. For instance, it could be explained that infection can arise not only from drinking lake water but also by merely coming into contact with it. Again, a villager might be told that the urogenital symptoms causing him concern might be caused by a multitude of diseases that can be contracted in different ways—poor hygiene, sexual intercourse, and contact with lake water.

Finally, the greatest possible account must be taken of practical ways of applying precepts that, however correct and well intentioned, have been acquired only from books. Advocating avoidance of all contact with lake water, when the lake is the only accessible source of water, would be inept and likely to discredit the message as a whole.

The primary difficulty in education for health is its transcultural nature, which is particularly manifest in the case described in this article. Working out a message is an operation that requires not only enthusiasm and the will to convince but also the systematic analysis of the epidemiological, social, and cultural factors that are essential elements in ensuring the pertinence of the message.

The information content of the message will depend on the knowledge and skills of the population. The vocabulary used must be familiar to the local population, and if necessary the investigator can draw up a word list for himself. If the educator is

working with an interpreter, the interpreter should translate sentence by sentence, expressing one idea in each or using several sentences to convey one idea, not the reverse.

At each education-for-health session, an attempt should be made to obtain as much feedback as possible; this will make it possible to reword the message and will increase the likelihood of community participation.

Reference must constantly be made to experience, using verbal imagery and exchanging points of view with the public. If this is done, the degree to which abstract concepts are used will be reduced to a minimum, and understanding will be enhanced.

Recommending action

The large surface area of the lake, its highly indented shoreline, and the relative mobility of the population mean that vector control by mollusciciding would be inappropriate. Moreover, any such effort would have to be preceded by long and expensive malacological studies. In similar conditions, considerable variation in the rate of infection from one place to another has often been observed. This is probably due to differences in the degree to which different types of behaviour are favourable to transmission. Transmission, however, remains inevitable since the lake is the only source of water. It would therefore seem reasonable to choose an approach aimed at reducing transmission and at preventing clinical complications of the disease when it does arise.

Schistosomiasis control is not considered a major health priority of the population, but

other diseases, whose symptoms partly overlap with those of schistosomiasis, are considered important. Hence, an educational message will have to be worked out that embraces a number of urogenital and diarrhoeal diseases, including schistosomiasis, in the hope of alleviating all the signs and symptoms that arouse the concern of the people. This would increase the likelihood that the context of the message would be followed.

The educational message would form part of an overall attack on the problem, which would include sectoral and intersectoral activities such as digging latrines, improving the condition of the lake shore by

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constructing landing stages, and building a water supply system.

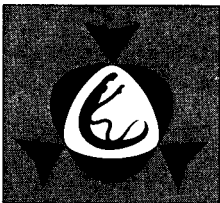
A health team, even an integrated one that draws on every sort of community participation, cannot hope to have a positive impact on health unless backed up by measures aimed at meeting the vital needs of the population—food, housing, hygiene and clean water. □

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Schistosomiasis control

This symbol of WHO's schistosomiasis control strategy shows the female and male adult worms within a ring—the cycle of infection. The arrowheads represent the methods we can use to break the cycle at its weakest points, as described in the above article.