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NEW APPROACHES TO SOCIAL AND ECONOMIC RESEARCH ON SCHISTOSOMIASIS IN TDR

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This paper describes new approaches to social and economic research being developed by the Social and Economic Research component of the Special Programme for Research and Trainning in Tropical Diseases of the World Health Organization. One of these is a study to assess the possibility of identifying high risk communities for urinary schistosomiasis through a "mailed" questionnaire approach distributed through an existing administrative system, thereby eliminating the need for face-to-face interviews by the research or disease control team. This approach, developed by the Swiss Tropical Institute in Ifakara, Tanzania, is currently being tested in seven other African countries. The paper also describes a change of emphasis of economic research on schistosomiasis, focusing on the intra-household effects of the disease on rural households, rather than, as previously done, studying the impact of the disease on the productivity of individual wage labourers. Other priorities involve the identification of epidemiological information needed for improved desision-making regarding acceptable treatment strategies in endemic areas with limited financial capacity, as well as research on how the adverse effects of economic development projects can be alleviated.

Key words: schistosomiasis – Social and economic research – TDR

All disease control programmes face the problem of scarce resources and hence of choosing between different options, often involving difficult decisions about where to target activities, which preventive or treatment strategies to adopt and with what frequency, and how to evaluate the relative strengths of different approaches. The Social and Economic Research (SER) component of the Special Programme for Research and Training in Tropical Diseases (TDR) is also concerned with these issues and how research can facilitate improved disease control choices and activities. In the present paper, several new research approaches are described, using schistosomiasis as an example. The approaches outlined, however, have broader applicability than to schistosomiasis alone.

TARGETTING HIGH RISK AREAS

Let us begin with the first part of the problem confronting disease control: the choice of where to target limited resources. Obviously, it is desirable to identify the communities at highest risk of the disease, but with limited resources elaborate epidemiological surveys are generally too expensive and time-consuming. To what extent can we use simpler methods – for example, relying on people's perceptions of disease problems and priorities – to determine which communities are at highest risk?

One approach to this problem was developed by researchers at the Swiss Tropical Institute, and tested in two districts in rural Tanzania, for the identification of high risk communities for urinary schistosomiasis (Lengeler, 1989, 1991). The strategy relied on simple questionnaires which consisted of no more than five questions, designed for headteachers and primary school children. The teachers' questionnaires were self-administered, whereas the students' interviews were completed by the teachers. The questions for the teachers focused on what diseases and what signs and symptoms were most common among children in the school, of which six diseases and six symptoms were to be chosen from lists on the questionnaire and ranked according to importance. Questions were also included concerning which health problems should be tackled first in the village, other development problems in the community and water points used. The students' interviews were simpler, concentrating on symptoms and diseases experi-

enced during the last month, and the teachers simply checked the appropriate boxes on the questionnaire.

The questionnaires were distributed entirely through the education system, in order to determine whether this route was an efficient one for obtaining and retrieving information quickly. Only the District level health officials were informed about the goals of the study – otherwise the specific interest in schistosomiasis was not made known to the participating communities. Questionnaires were delivered to the District Education Officer who was charged with the responsibility for distribution and retrieval of the questionnaires as quickly as possible.

On return of the questionnaires, extensive parasitological screening, using urine filtration in one district and reagent stick testing in the other, was conducted in the participating communities, in order to medically validate the questionnaire results. In the second district, where reagent sticks were used, another step was added, and teachers were given one day's training in the use of reagent sticks for detecting hematuria. The results of the teachers' tests were also checked by the research team for a sample of schools. Financial costs of the study (transport, equipment, salaries, travel) were also kept.

The results of the study were very encouraging: questionnaire return rates were high – all teachers' questionnaires and 97% of the students' questionnaires were returned within one month in one district and in the other, 98% of all questionnaires were returned within six weeks. In both districts sensitivities and specificities of the questionnaires were near or above 90% in distinguishing "positive"* and "negative" schools. Negative schools had particularly high predictive values (above 90%), indicating that low-risk units could safely be identified by the questionnaires and excluded from further interventions. The questionnaires were found to be 24 times cheaper than parasitological testing for district-wide screening, and teacher reagent stick testing was five times less expensive than urine filtration.

This appears to be a very promising approach for identifying communities at high risk for urinary schistosomiasis. In order to test its broader applicability similar studies are currently underway in six other African countries. Only partial results are available, but preliminary indications are that the approach is viable, although predictive values may be slightly lower than in Tanzania. In the multi-country study, however, validation took place approximately six months after the questionnaire phase, a time lag which may be too long to expect close correspondence in results. In two of the countries intestinal schistosomiasis is also being investigated, in order to see whether the technique is applicable to *Schistosoma mansoni* (Figs 1, 2).

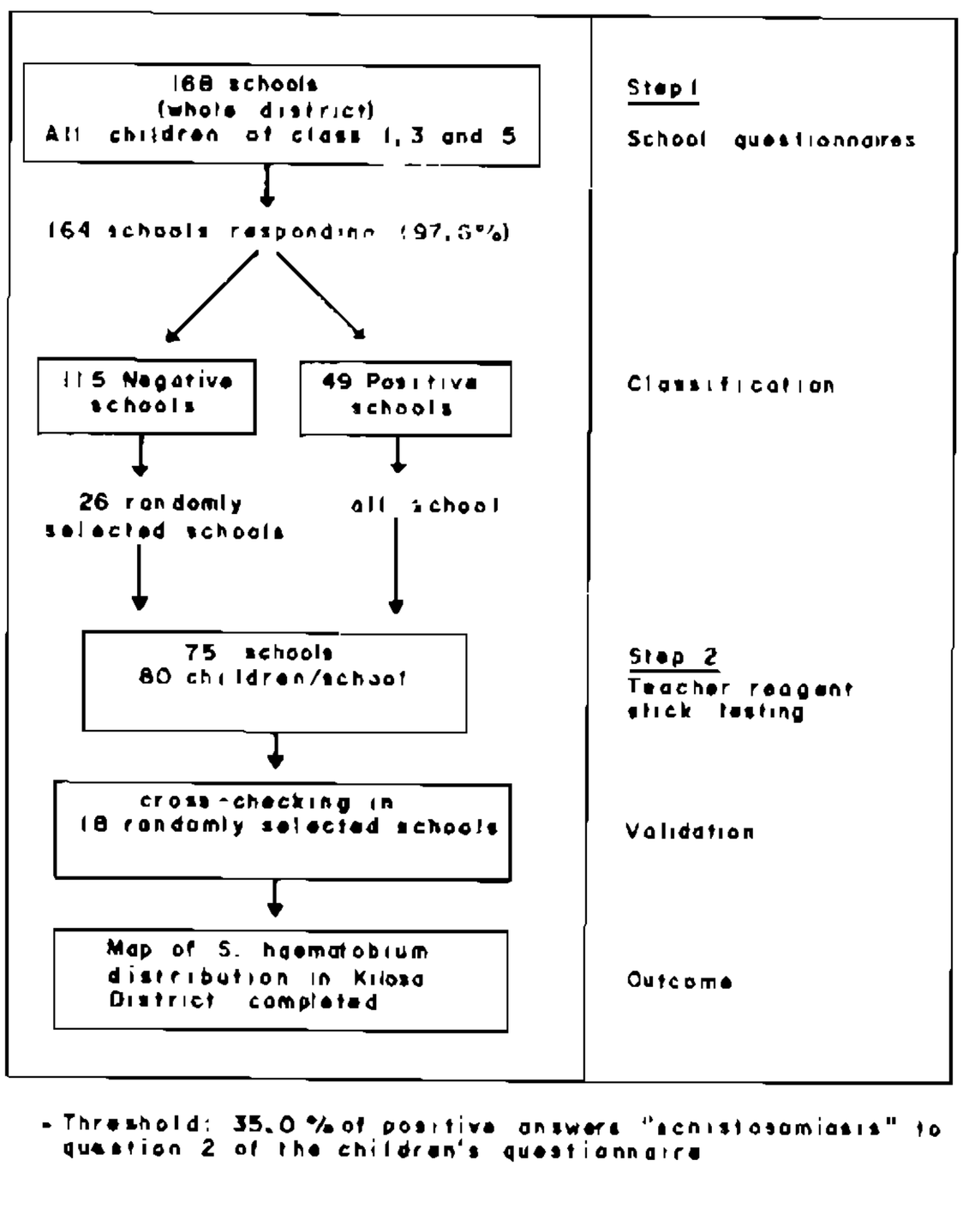

Fig. 1: diagram of the two-step methodology for *Schistosoma haematobium* mapping (Kilosa District, Morogoro Region, Southern Tanzania). (From Lengeler, 1989).

CHOOSING BETWEEN TREATMENT STRATEGIES

Assuming that we can identify the communities at highest risk of a disease, what treatment strategies and disease control measures should be adopted? In order to answer this question SER is encouraging research on the cost-effectiveness of different treatment options for schistosomiasis, especially as available data on the costs of such options are not sufficiently reliable for broad programme planning. When vertical programmes for praziquantel delivery

*At least 50% parasitological prevalence among school children.

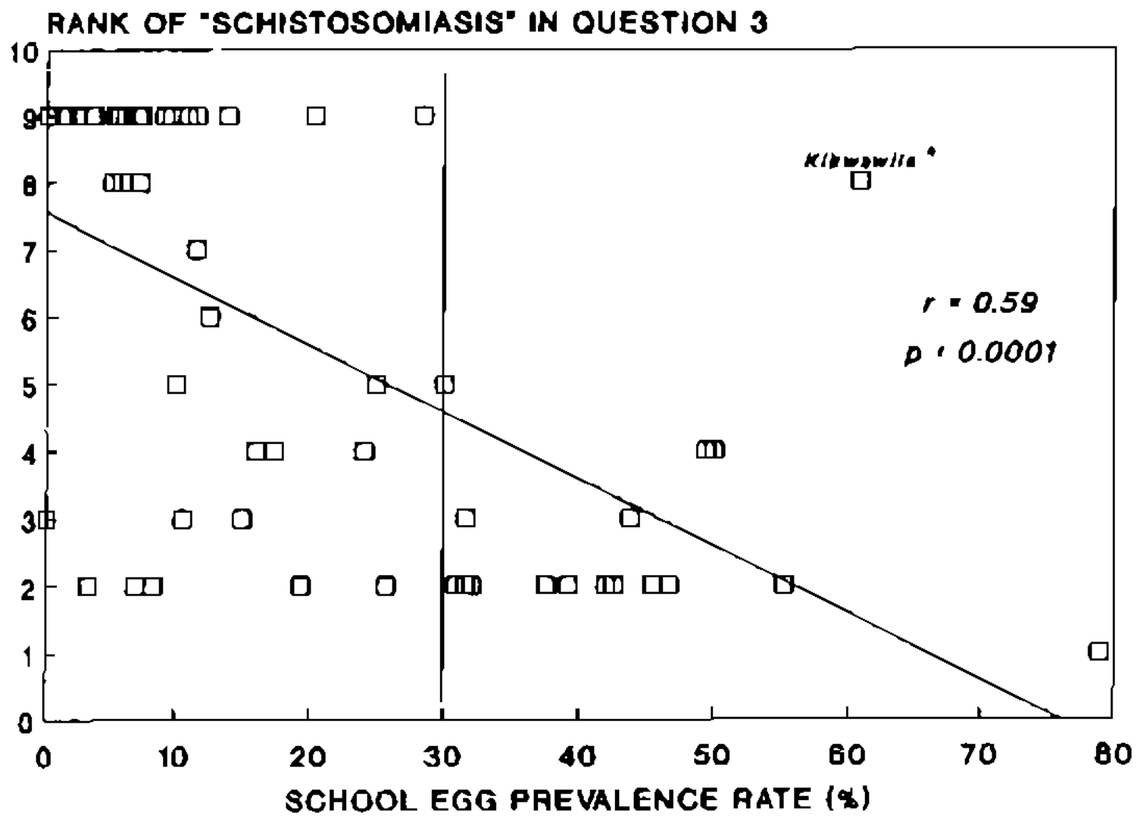

Fig. 2: regression analysis of the rank of the answer "schistosomiasis" in the question 3 of the headteachers' questionnaire, with the school prevalence rates in 56 schools of the Kilombero District. (From Lengeler, 1989).

have been adopted, these have proven very expensive. Evans (1991) has pointed out that although drugs may account for only a minor proportion of total delivery costs in some situations, praziquantel accounted for almost 44% of the Egyptian schistosomiasis control programme's chemotherapy costs, and that even reductions as large as 50% in the price of praziquantel would not make large scale vertical delivery affordable in most endemic countries without external aid. Hence, more affordable alternatives to vertical programmes must be developed, preferably integrated with primary health care. Modelling is a useful and relatively inexpensive way of indicating relative costs and outcomes, and SER has been collaborating with scientists at Imperial College, London, on the use of models to assess the cost-effectiveness of treating schistosomiasis at the same time as other intestinal helminth infections.

Evans (1991) also argues that costs could be reduced by targetting programmes at special groups such as school-age children, but notes that the question of effectiveness is also critical. The present state of knowledge about morbidity from schistosomiasis is very inadequate, and in order to measure effectiveness more information is required on the morbidity due to schistosomiasis at the community level (Bundy, 1990). Hence, an important role for SER is to point out the epidemiological research needed to enable the effectiveness of different control options to be estimated. It is anticipated that field studies to evaluate the cost-effectiveness of alternate treatment strategies will follow the completion of the multi-country study described above, building on the existing network of researchers.

ESTIMATING THE SOCIAL AND ECONOMIC IMPACT OF SCHISTOSOMIASIS

The social and economic impact of disease is also of concern, especially in developing countries where scarce funds have to be allocated in a rational manner to alleviate the greatest burden of disease. SER is therefore encouraging research on the social and economic impact of schistosomiasis, particularly at the household level. Previous research has focused mainly on the impact of schistosomiasis on productivity of agricultural labourers, but it seems that this approach does not take account of the intra-household impact of the disease, an impact likely to be substantial for the family as a whole, as family members adjust their workload to compensate for the lower productivity of the ill member(s).

ALLEVIATING NEGATIVE CONSEQUENCES OF DEVELOPMENT PROGRAMMES

The disease consequences of economic development programmes such as large dams and irrigation schemes pose other important challenges for SER. Much research has demonstrated the negative effects of such schemes for the tropical diseases, especially schistosomiasis and malaria. Also, a number of guidelines have been developed by the Panel of Experts on Environmental Management for Vector Control (PEEM) programme which demonstrate how planning can be adapted to incorporate health concerns. Yet the problem has not disappeared, and it seems that research is now needed to help us understand why schistosomiasis and other health problems have not been alleviated as a result of the large amount of information available to help safeguard against these outcomes.

Such research would have to be practical and applied, perhaps using a case study approach to investigate what information was available to development planners, whether this was fully understood, to what extent the information was taken into consideration in the planning and implementation phases, and at what point, and for what reasons, a negative outcome had resulted. If these questions could be answered, steps could then be taken to in-

tervene at the point(s) where a breakdown in the translation from planning to action occurred.

Action-oriented research is also necessary regarding how much people know in advance about the possibility of encountering new diseases in the area of destination, and the extent to which they are forewarned about these by future employers. Ways of preparing migrants for circumstances at their destination should be envisaged, and different strategies tested through research.

CONCLUSIONS

As outlined above, SER has many challenges, and meeting these requires a range of skills from both biomedical and social sciences. Each of the teams involved in the multi-country study discussed in this paper consists of one biomedical and one social scientist. Also, as we have seen, research on cost-effectiveness requires considerable epidemiological knowledge, and modelling, a mix of parasitological, epidemiological, clinical and social science contributions. Finding such teams is a constant challenge for SER, and compromises sometimes have to be made. The Research Strengthening Group of TDR often assists SER, for example, in supporting short-term training for biomedical scientists in social science methods for specific tasks, or in holding multidisciplinary workshops to facilitate interdisciplinary research and to assist with the development of research protocols. Disease control personnel are included in research and training activities to the extent possible, in order to ensure that the investigations pursued with SER funding are useful and can be applied in practical preventive and control activities. (Fig. 3).

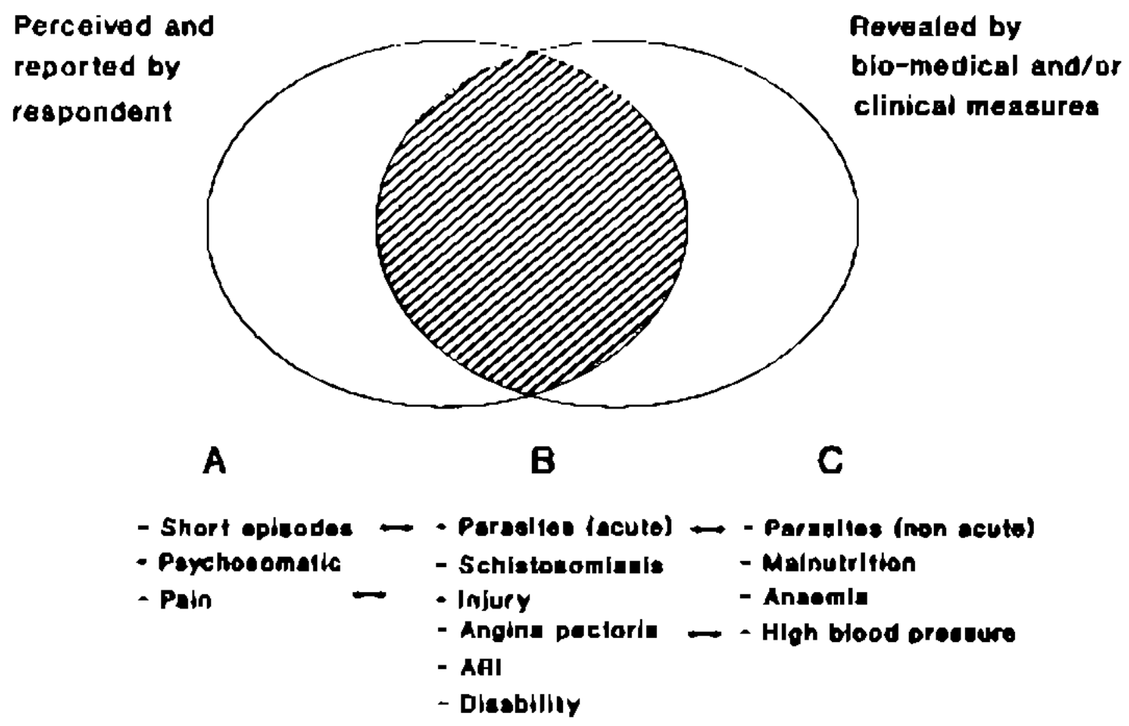

Fig. 3: examples of diseases/health problems classified by (i) whether they are perceived by respondents and (ii) whether they can be revealed by biomedical measures. (From Lengeler, 1989).

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