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Using questionnaires through an existing administrative system: a new approach to health interview surveys

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This paper reviews recent developments in the field of health interview procedures, and their contribution to decentralized health planning. Their importance is reflected in the growing awareness that the perception of health problems by the beneficiaries is an important element in the success or failure of a primary health care (PHC) strategy for disease control and health improvement.

The 'indirect' health interview procedure represents a methodological evolution of the traditional interview approach, by the fact that questionnaires are not administered directly by the investigators or their field staff to the chosen key informants. They are distributed through an existing administrative system and self-administered by the recipients. This reduces the costs of such surveys, and allows large areas to be screened rapidly.

The paper describes ongoing research designed to test this approach in seven African countries. Methodological problems and limitations, the most important of which is that it is not appropriate for individual diagnosis, are also discussed. This approach is best used as a screening strategy to identify high risk communities, on which health resources can then be concentrated.

Introduction

Health interview surveys have been used in both developed and developing countries to assess morbidity as it is perceived by community members, and to investigate the utilization patterns of health services (Kroeger 1983; Ross and Vaughan 1986). Asking the beneficiaries of the health system about their perceptions of disease and health problems, and especially about their priorities with regard to health-related actions, can add an important element in the health planning cycle (Tanner 1989). Both biomedical surveys (relying on routine statistics or epidemiological surveys) and health interviews (relying on community-based questionnaires) provide valuable and complementary information for health care management. They should, in turn, lead to more targeted health activities that may effectively improve the health status of the population.

Kroeger (1985) discussed the difference between 'professionally assessed health needs' and the 'people's perceived health needs' in a rural setting in Ecuador, and described how 'agreed needs' could form the basis for specific actions within existing health services. Another method of data gathering based on population-based reports about deaths from a given disease, the verbal autopsy, can be useful for evaluating disease prevalence, and for measuring the impact of interventions. This approach has been reviewed recently by Gray (1991), and its strengths and weaknesses are discussed in the present issue (Kalter; Snow and Marsh).

Two important elements in the discussion of the usefulness of the health interview approach for health planning are: (1) the temporal evolution of the people's and the professional's need perceptions (Kroeger 1985), owing to changing

health patterns and; (2) the fact that large, national surveys do not account for in-country variations of health problems (White 1985), and their perception by the population (Kroeger 1985). The temporal and geographical variability of illness and its perception implies numerous and repeated surveys, and calls therefore for a methodology that is simple, reliable and above all, sustainable. However, since traditional surveys are costly in terms of staff and resource mobilization, new and simpler screening methods are required.

Recent studies in Tanzania on the community diagnosis of urinary schistosomiasis (Lengeler et al. 1991a, 1991b) have demonstrated that simple, self-administered questionnaires could be distributed in a cost-effective manner through an existing administrative system, and that their diagnostic performance for identifying high-risk communities was very good. These studies were based on what was called an 'indirect interview approach' (Lengeler et al. 1991c) because the researchers were not personally involved in the interviewing. This represented an alternative and simplified methodology for health interviews, by eliminating the need for a face-to-face ('direct') encounter between the investigator and the respondent. The strengths and limitations of this approach, as exemplified in an ongoing multi-country study, are discussed in this paper.

The community questionnaire approach: a multi-country study

Background of the study: the Tanzanian experience

The Tanzanian studies were carried out in two neighbouring rural districts of southeastern Tanzania. The first one, in the Kilombero District (Lengeler et al. 1991a), was the first attempt to distribute health-oriented questionnaires through the educational and political party systems. The validation of the questionnaire approach was carried out by the research team directly, using a parasitological technique. The second study, carried out in Kilosa District (Lengeler et al. 1991b), confirmed the operational feasibility of the questionnaire distribution and allowed the teachers to carry out the validation phase, by testing the urine of school children with a simple biomedical test (reagent sticks detecting microhematuria). The design of these studies was adopted in the multi-country study, described below.

The unit of analysis in the studies was the community, and individuals were not identified during the questionnaire phase. The idea behind this community diagnosis approach was that it allowed for the rapid identification of communities at high risk (both real and perceived), for a given disease or health problem. These communities could then be followed up by control programmes to identify and treat affected individuals. This two-step procedure should lead to a more effective management of available resources.

The multi-country study

The goal of the multi-country project is to identify communities at high risk for urinary schistosomiasis in African rural areas by using simple questionnaires, distributed and administered entirely through an existing administrative system. It was felt that before the approach could be widely recommended, more experience on its feasibility and cost-effectiveness was needed in different socioeconomic, political and ecological settings. The study was initiated by TDR in 1989, and is now underway in seven African countries - Cameroon, Congo, Ethiopia, Malawi, Zaire, Zambia and Zimbabwe.

Apart from its specific objectives, the study aims at increasing the interaction between field scientists in Africa, and at strengthening applied field work in the participating countries. An original contribution of the study is the strong interaction in each team between a social and a biomedical scientist. The data collected is not only biomedical - qualitative monitoring on disease perception patterns, operational feasibility, detailed costs, social acceptability, key informants' views on the approach, educational and other spin-offs are also incorporated into the study design.

Questionnaires used in the multi-country study

Most countries adopted questionnaires similar to the ones used in the Kilosa study (Lengeler et al. 1991b): one questionnaire for headteachers and one questionnaire for school children (Tables 1 and 2). Their design is discussed in detail elsewhere (Lengeler et al. 1991a, 1991c). Since the questionnaires were filled in by the

Table 1. Headteacher questionnaire used in Kilosa study. The introductory text gives all necessary instructions.

District Education Office - Kilosa District

HEALTH SITUATION IN THE SCHOOLS OF THE KILOSA DISTRICT

Questionnaire 1: To be filled in by the Headteacher

INTRODUCTION:

The purpose of this questionnaire is to assess the health situation in the schoolchildren of the Kilosa District. There are two questionnaires to fill in. The first is this one, to be answered and filled by the headteachers. Please write down the answers according to your experience of the health of the pupils. Read the whole questionnaire once through before starting to fill it.
The second one is to be answered by all schoolchildren of Standard 1, 3 and 5 only. One teacher per class should ask every student personally and seperately from the others about 6 diseases and 6 major symptoms (listed on the second questionnaire) that the child might have experienced in the last month. Put a (✓) if the answer is "yes", a (o) if the answer is "no" and a (-) if the child doesn't remember or can not answer.
After completion, please return the forms to the District Education Office, Kilosa, before August 12.
Thank you for your help!

Name of school: _____ Division: _____

Village: _____ Ward: _____

QUESTION 1: Among the following list of diseases, please choose the six diseases that are most effecting the children of your school and rank them according to their importance.

The diseases are: disease of the abdomen, diarrhoeal disease, malaria, skin disease, eye disease, schistosomiasis, upper respiratory tract infection, measles, nutritional problem, worms.

Rank 1 _____

Rank 2 _____

Rank 3 _____

Rank 4 _____

Rank 5 _____

Rank 6 _____

QUESTION 2: Among the following list of symptoms, please choose the 6 most frequent ones and rank them according to their importance.

The symptoms are: cough, itching, headache, fever, abdominal pain, wounds, blood in urine, joint pains, blood in stool, diarrhoea, convultions.

Rank 1 _____

Rank 2 _____

Rank 3 _____

Rank 4 _____

Rank 5 _____

Rank 6 _____

QUESTION 3: Among the health problems effecting the schoolchildren, which ones should be tackled first? Try to rank the 6 most important.

Rank 1 _____

Rank 2 _____

Rank 3 _____

Rank 4 _____

Rank 5 _____

Rank 6 _____

QUESTION 4: What are the main problems effecting your village ? Please rank 6 of them by order of importance.

The problems are: clean water, agricultural services, availability of goods, health problems, transport, sanitation, education, food, better housing, milling machine, other.

Rank 1 _____

Rank 2 _____

Rank 3 _____

Rank 4 _____

Rank 5 _____

Rank 6 _____

QUESTION 5: What water points do the people use in the village ? Try to rank the following according to their use in the village: wells, ponds, hand pumps, rivers, tap water, other.

Rank 1 _____

Rank 2 _____

Rank 3 _____

Rank 4 _____

Rank 5 _____

Rank 6 _____

Thank you for your help !

District Education Officer
Kilosa District, Kilosa.

UMAK 3, 7/88.

Table 2. School children's questionnaire used in Kilosa study. More children of the same class can be interviewed on the back of the form.

HEALTH RESEARCH IN PRIMARY SCHOOLS OF THE KILOSA DISTRICT - DISTRICT EDUCATION OFFICE

Questionnaire 2: Questions concerning the health of pupils

Explanation: Put a mark [√] for "yes" or a [o] for "no" and a dash [–] if the child does not remember or can not answer. You have to answer the following questions. Each box is for only one child. If the boxes are not enough on one page, use the back. Return this sheet to the Headteacher. Thank you !

Name of school _____ Use only for class I, III and V Class _____

Pupils	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Age																																			
Sex (M/F)																																			

Question 1: Which of the following symptoms did you experience during the last month?
Put a mark [√] or a [o] or a [–] in the boxes in front of corresponding symptoms.

Coughing																																			
Itching																																			
Headache																																			
Fever																																			
Abdominal pain																																			
Blood in urine																																			
Blood in stool																																			
Diarrhoea																																			

Question 2: Which of the following diseases did you experience during the last month?
Put a mark [√] or a [o] or a [–] in the boxes in front of the corresponding symptoms.

Malaria																																			
Diarrhoea																																			
Skin diseases																																			
Eye diseases																																			
Schistosomiasis																																			
Respiratory infect.																																			
Worms																																			
Abdominal problems																																			

respondents in the absence of the researchers, precision, easy comprehension and brevity were essential. The headteacher questionnaire was self-administered, with two closed questions and one open-ended question relevant for disease screening. Schistosomiasis, or its main symptom (blood in urine) were 'hidden' among ten other frequent health problems in order to avoid a bias towards this disease. Two questions were also included on other development problems affecting the village. In Congo and Zaire similar questionnaires were also distributed to political leaders, and in Zimbabwe they were sent to village health personnel. Two key elements of the approach were therefore its community focus and its lack of obvious emphasis on any particular disease or problem.

The children's questionnaire was administered by a teacher to the students of selected classes. Each child was asked separately about signs/symptoms and diseases experienced during the last 15 days. At the analysis stage, the number of positive answers to the questions, 'Did you have schistosomiasis?' or 'Did you have blood in urine (during the last 15 days)?' was then calculated by class and school, providing a relative prevalence figure.

Two countries (Cameroon and Congo) used a slightly different children's questionnaire, with one result sheet for each child. The reason for this modification, which meant a major increase in the amount of paper to be sent out for the interviews, was that if a child gave a positive answer for a symptom or a disease, investigators included answers on treatment (type and site). In Ethiopia, the children's ethnic origin, duration of stay in the study area, and religion, were added to the questionnaire, in addition to sex and age.

Study design

Design 1

Five countries (Cameroon, Congo, Ethiopia, Malawi, Zimbabwe) chose a design similar to that of the Kilosa study, where the validation of the questionnaires is done by school teachers, rather than by a biomedical team (Figure 1). The following procedure was used:

Step 1: After being designed and pre-tested, the questionnaires were sent out through the existing school system, usually with other correspondence or salaries. They were filled in by the teachers and returned by the same route to a central office, where they were collected by the research teams. All country teams routed the questionnaires through the primary school system, which appeared to give the best access to the main target group for schistosomiasis (children aged 10–15). Congo and Zaire also routed a questionnaire through the civil administration to all village leaders, and in Zimbabwe the team reached all the persons in charge of peripheral health services through the District Medical Office. This phase was completed by March 1991, and the first operational results are given below. For the next step (validation and individual identification), the schools were classified into 'high risk' and 'low risk' units, according to a country-specific cut-off. In most countries, the median of the children's questionnaire results was taken as the cut-off. Thirty schools were then selected in each of the two groups.

Step 2: Following the Kilosa approach, the headteachers of these 60 schools will be asked by the District Education Officer (DEO) to attend a one-day seminar, where they will be given a short introduction to schistosomiasis, and then instructed on the use of reagent sticks detecting microhematuria. Reagent sticks detecting blood in urine are fast, practical and efficient tools for diagnosing urinary schistosomiasis in communities (Savioli and Mott 1989). At the end of the seminar, the headteachers will be given enough reagent sticks and survey equipment to test 120 children in their school.

Once these results are available at a central office, the team will randomly select 30 schools among the 60 where the teachers performed the testing. The team will visit these schools and retest the same 120 children (that is, those present on that day in the school), in order to cross-check how well the teachers performed the testing. Finally, all hematuria-positive children will be treated with a single oral dose of praziquantel.

Design 2

Two teams (Zambia and Zaire) chose a direct validation design, similar to the one used in the

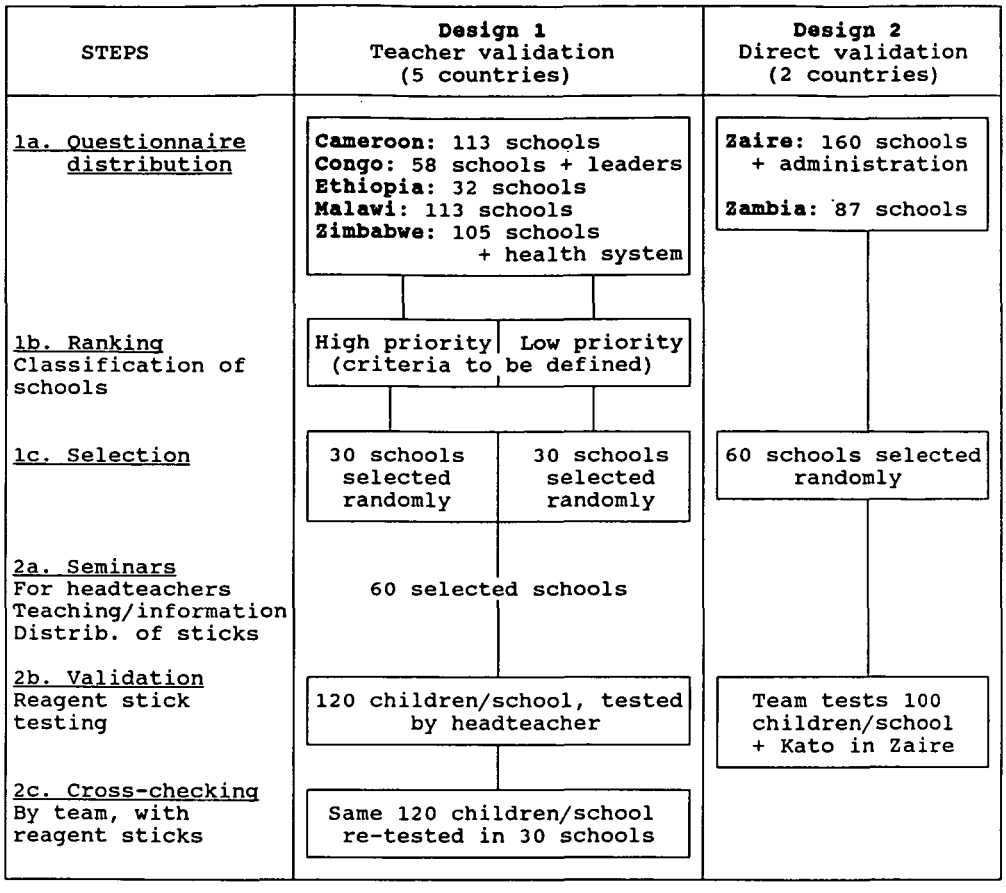

Figure 1. General design of the TDR/SER seven country study on the rapid assessment of communities at high risk for urinary schistosomiasis.

first Tanzanian study (Lengeler et al. 1991a). The questionnaires are sent out exactly as in Design 1, but the validation is carried out by the investigators themselves. The biomedical team will randomly select 60 schools among the ones that returned the questionnaires, go to these schools and test 100 children with reagent sticks. Kato thick smears will also be done in Zaire (see below).

Intestinal schistosomiasis

In Zaire, Cameroon and Ethiopia, intestinal schistosomiasis also exists in the study area, and hence it was also included in the study. In all three countries, a question about 'blood in stool' was added to the children's questionnaire, in addition to 'diarrhoea', to see whether it had a diagnostic value for intestinal schistosomiasis. In Ethiopia, the item 'distended stomach', for which a specific Amharic word exists, was also added to the list of the questions in the children's questionnaire.

In Zaire, the direct validation approach will include testing with Kato thick smears as well as reagent stick testing, and comprehensive data will therefore be available. In Cameroon and Ethiopia *S. mansoni* infections are only of importance in a limited part of the study area, and only ten schools will be surveyed by Kato thick smears (in addition to reagent sticks) in order to collect preliminary data.

First operational results

The distribution and collection of the questionnaires by the existing primary school system worked well in all countries. In Malawi and

Zimbabwe not all questionnaires are back yet. Return rates were high in all other countries (above 85%), and 921 teachers and nearly 60 000 children have been interviewed. In four countries the teams had to assist the school inspectors in some way in the distribution and collection of the questionnaires (petrol, allowances, car) and these additional costs will be taken into account later for the cost-effectiveness analysis. Nationwide strikes delayed the return of the questionnaire in Congo and Zambia. The distribution of questionnaires to political leaders worked well in Zaire (510/530 returned = 96%) but not so in Congo (29/58 returned = 50%). Questionnaires distributed to health personnel worked very well in Zimbabwe (28/28 within two weeks).

These preliminary results confirm that it is possible to distribute simple questionnaires efficiently through the primary school and civil administration systems, in different social and economic environments in Africa.

Expected results based on the Kilosa experience

Operationally, the Kilosa study (Lengeler et al. 1991b) was successful and high return rates were noted: within four weeks, 164 school questionnaires out of 168 (97.6%) were returned to the DEO. For reagent stick testing by the teachers, 73/75 schools (97.3%) had returned the result sheets to the DEO within six weeks, with 5740 children being tested. Cross-checking by the survey team in 18 schools confirmed the accuracy of the teachers' testing.

Prevalence figures generated by the questionnaires were never used directly, since they were systematically lower than the reagent stick results. Instead, the linear correlations between the biomedical (hematuria) prevalence rates and the prevalence rates given by the questionnaire results were analysed. Highly significant correlations were found between the biomedical testing and the headteachers' and children's answers. Question 2 of the children's questionnaire ('Did you have schistosomiasis during the last month?') had an excellent diagnostic performance (sensitivity and specificity >90%) for identifying schools at high risk for urinary schistosomiasis (parasitological prevalence rate ⩾50%). The high negative predictive value of this question (93%) was especially interesting, since it meant that low risk ('negative') schools could safely be identified and excluded from further testing on the basis of the questionnaire results.

Further, the priority rank of schistosomiasis as a disease to be controlled (question 3 of the headteacher's questionnaire) was found to be clearly related to its hematuria prevalence in the community (Figure 2). This showed that the disease was well recognized by the teachers, and that a process of prioritization was taking place. Furthermore, there seemed to be a 'high priority limit', a disease prevalence rate (in this case 42% hematuria prevalence) above which schistosomiasis was consistently a 'top 5' priority disease, while below this limit it was often not even cited (= rank 7). This information is clearly relevant for the planning of control programmes.

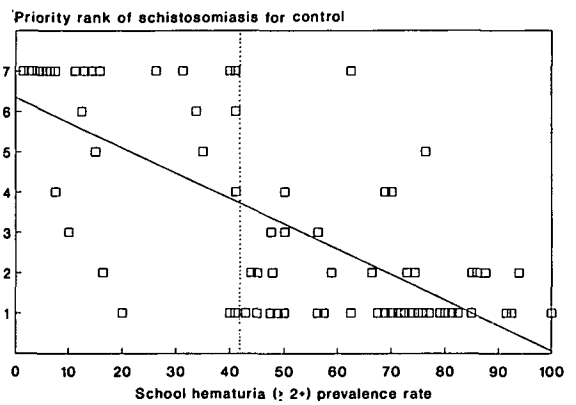

Figure 2. Relation (and best-fit line) between the prevalence of hematuria in the community and the rank given by the headteachers to schistosomiasis for control priority, in 73 schools of the Kilosa District. The vertical line indicates the 'high priority limit' (see text) (Modified after Lengeler et al. 1991b).

Costing of research activities

Comparative costing from the Kilosa study

The cost of questionnaires aimed at key informants and distributed through an existing administrative system compares extremely well with urine filtration, the reference parasitological technique for urinary schistosomiasis (WHO 1985). Figure 3 shows the financial costs of these two approaches in the Kilosa study. The estimation of the screening costs with urine filtration was based on data from the Kilombero study (Lengeler et al. 1991a). 'Planning/design' and

'evaluation' were defined as separate categories, as opposed to the execution phase, which was broken down into 'personnel', 'transport' and 'equipment'. The teachers' working time was not counted, because it was considered by the DEO to be part of their duties within the existing school health programme. However, it is recognized that if one were to calculate the economic costs, as distinct from the purely financial costs of the study, the opportunity costs of teachers' time would have to be estimated as well. Treatment costs were not included in these calculations.

The cost per screened school of the questionnaire approach (US$7) was 22 times below that estimated for a specialized team performing urine filtration (US$154). While the costs for planning and evaluation were similar in both approaches, those arising from the execution phase showed a tremendous difference: the parasitological screening cost 95 times more for personnel, 16 times more for transport, and 25 times more for equipment and supplies (Figure 3).

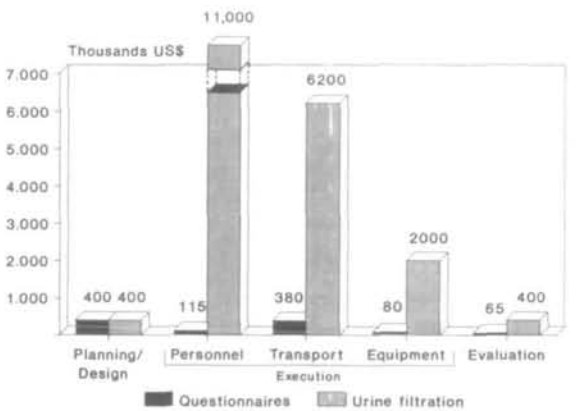

Figure 3. Comparative breakdown of costs for the questionnaire and urine filtration screening approaches (Kilosa study).

The complete two-step approach (questionnaires followed by teacher reagent stick testing) cost US$19 per screened school, and represented a compromise between the two approaches mentioned above. The first screening step with questionnaires identified the high risk schools with over 90% efficacy. In the second step, the teachers carried out the reagent stick testing of the children in the high risk schools, and identified infected individuals who could subsequently be treated.

The most important consequence of the dramatic cost reduction is that it renders this type of screening and disease control feasible and applicable by a decentralized (district and regional) authority. With limited support for buying reagent sticks and drugs, the screening and treatment of children with measurable urinary schistosomiasis morbidity could be initiated and monitored at the peripheral level. All the planning, execution and evaluation of the survey can therefore be done at the level that can also use the results and translate them into health care actions.

Some methodological considerations on cost calculation

For cost calculations, one should try to simulate as closely as possible the actual situation of a Ministry of Health or a local government investigator involved in such a screening. The easiest way to perform a cost estimate is to break down all costs into units, and to find out the price of each unit. Unit costs of salaries (per day or per month), allowances and per diems should be taken from the official government scales. For transport, the cost per kilometre of a vehicle is not only fuel, but also spare parts, engine oil, tyres, and so on. Since few government offices calculate the price per driven kilometre, a crude estimation often has to be made (for example, the cost per driven kilometre for a four-wheel drive vehicle is usually around US$0.5). For equipment and supplies, locally available resources (and therefore prices) should be considered first, but this might be unrealistic for many biomedical items. Dividing the work into phases, such as planning, execution and evaluation, and then dividing each phase into budget items such as transport, personnel, supplies and material costs, will permit a simple but relevant financial analysis later.

Defining the efficiency of the screening approach requires a comparison of its costs and effectiveness, and is relatively easy if a good validation procedure and a detailed cost compilation are carried out. Putting the cost and effectiveness data together allow for an informed decision to be made by the planners. In the Kilosa study, the effectiveness of the school children's

questionnaire is defined as its ability to categorize the schools correctly into low or high risk groups – in this case 86% of the schools were correctly categorized. This can be compared with the approximately 100% effectiveness achieved using the urine filtration method of identification. However, the cost of the urine filtration technique was 22 times that of the questionnaires. In terms of an efficiency or cost-effectiveness ratio, the questionnaires are clearly more efficient, but they do not allow all the high risk schools to be identified. Planners would then have to decide whether it is worth spending the extra resources on using urine filtration instead of the questionnaires, which would increase effectiveness (taken as the percentage of schools correctly identified) by less than 15% while increasing costs by a factor of 22.

Strengths and weaknesses of the health interview approaches: other experiences

Recently, several community and hospital-based morbidity studies using interviews of various kinds have indicated that diseases such as malaria (Jackson 1985), schistosomiasis, measles (Stanfield and Galazka 1984), coronary heart disease (Bulpitt et al. 1990), child disabilities (Zaman et al. 1990) and other health problems were well recognized by community members, and that the predictive values of the responses were promising for many of them. This was also the case with clinical histories given by mothers of seriously ill children (Alonso et al. 1987; Kalter et al. 1991) and with the community diagnosis of major health problems (Degrémont et al. 1987). Selected other diseases or health problems might also be considered for an interview approach, but some basic restrictive conditions (discussed below) should be kept in mind. A careful validation, aimed at assessing the predictive values of the interview responses, is crucial for the validity and acceptability of this approach.

Diseases and health problems: perception versus biomedical measure

To be eligible for a community questionnaire approach a disease or health problem must fulfil two conditions:

- It must be selectively recognized by the affected individuals
- It must be revealed by a biomedical or clinical measure.

Figure 4 illustrates this double requirement. Diffuse pains or psychosomatic troubles (Group A), are well recognized by respondents, but usually are not revealed by biomedical or clinical measures. Very short disease episodes such as high fever and short periods of diarrhoea will be picked up only if appropriate examination intervals are chosen. Certain culture-specific syndromes which do not have an equivalent in Western medicine, such as 'susto' among Indians on the Mexico-United States border (Rubel and O'Nell 1979), also belong to this group. The resulting lack of confirmation by an accepted 'objective' biomedical marker, at least during the validation phase, will make it unreliable as a measure of health status in the modern medical community.

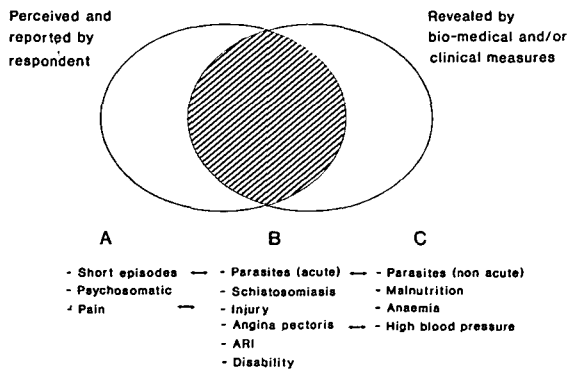

Figure 4. Examples of diseases/health problems classified according to: (i) whether they are perceived by respondents and; (ii) whether they can be revealed by biomedical or clinical measures.

On the other hand, diseases or health problems that are either asymptomatic or chronic with non-specific symptoms, such as non-acute parasitic diseases, malnutrition, anaemia or high blood pressure (Group C), are usually not recognized by respondents, but can be easily demonstrated by biomedical or clinical measures. Belcher et al. (1976) commented on this discrepancy in a large community diagnosis survey in Ghana.

Between these two groups we find the diseases or health problems that are both subjectively recognized and objectively measurable (Group B), and therefore *a priori* amenable to a questionnaire approach. They include parasitic diseases in an acute phase, schistosomiasis (cited separately

because it is also well perceived in the non-acute phase), injuries, angina, ARI and some disabilities. Following Gray (1991) and Kalter et al. (1991) we could add measles, pertussis, severe diarrhoea and meningococcal meningitis to this provisional list. As illustrated by the horizontal arrows, the limits between A-B and B-C are not clear-cut. In the case of parasitic diseases, for example, perception or non-perception depends on the severity of the morbidity resulting from the infection. It depends also on the disease conceptualization, since the limit between diseases and illness is influenced by the cultural environment (Heggenhougen and Shore 1986).

While much is known about the biomedical and clinical measurement of diseases in health services as well as in the field, relatively little information exists on perceptions of diseases or other health problems by specific population groups. The diversity of perceptions in different communities calls for equally diverse investigations. Kroeger (1983) therefore advocated a thorough qualitative disease perception study before undertaking a health interview approach. Manderson and Aaby (this issue) review some rapid assessment procedures (RAP), based on medical anthropology, which could be very useful in this context.

Diseases and health problems suitable for an interview approach

Within Group B of Figure 4, which is of interest for our purposes, simple subdivisions can be made:

(1) Diseases with a distinct clinical picture, such as leprosy, schistosomiasis or African trypanosomiasis, well known in endemic areas and usually having a specific name in local languages. Their identification by a questionnaire approach is therefore facilitated.
(2) Health problems having great relevance for the population but not attributable to a single infectious agent, such as diarrhoea, itching, fever or disability. They are well recognized and can be detected easily.
(3) Other diseases or health problems identified on the basis of one or two major signs or symptoms, such as intense chest pain for angina, elephantiasis/hydrocele for lymphatic filariasis, blinding or 'leopard skin' for onchocerciasis. If a major sensitive and specific sign or symptom is not available, it might be still possible to use a diagnostic algorithm (Gray 1991).
(4) Certain disease not likely ever to be amenable to an interview approach, although perceived by the patient and measurable by biomedical techniques. These are diseases without a salient picture, which renders a differential diagnosis from similar diseases impossible on the basis of the questionnaire alone. These include most cancers, fevers of viral and bacterial origin, hepatopathies, and diseases of the central nervous system. The problems inherent to health interviews concerning these diseases resemble closely many of the problems faced by a clinician working without a laboratory. Moreover, an epidemic substantially changes the situation for diseases such as meningitis, cholera and measles. During an epidemic, the identification of these diseases becomes very likely, because similar diseases do not occur with the same high frequency.

Limitations specific to the community questionnaire approach

Most basic methodological problems with the community questionnaire approach, described in this paper, have been reviewed in an earlier publication (Lengeler et al. 1991c). The approach was discussed on the basis of the three main study phases: (i) questionnaire design and pretesting; (ii) questionnaire distribution and; (iii) validation. Only a brief review of the key points is therefore included here.

Operational limitations: The approach relies heavily on a well-functioning administrative structure to distribute and administer the questionnaires. The primary school system has been found to be very effective for this purpose in eight African countries. The political or civil administration channel has also been working well in three of these countries. Other administrative systems, such as co-operatives, postal services, traditional chiefs, or priests, able to provide literate and knowledgeable informants and ensuring good geographical coverage, may also be considered for the purpose.

Whom to interview: A questionnaire can be directed towards one or a few selected key informants, such as village chiefs or headteachers. Whether such persons' answers will reflect their personal experience, that of their extended family, or even that of the whole community cannot be

assessed easily (Kroeger 1985), but these effects can be influenced by the way questions are formulated. Interestingly, during the multi-country study in Zaire, some village leaders called upon mothers to help them answer the questionnaires because they felt that they did not know enough about the children's diseases. Since many of these leaders were illiterate, a secretary helped them to fill in the forms. In such a situation, the answer is more likely to reflect a community consensus on the matter than when the questionnaire is filled in by one person alone.

Another alternative is the multiple interview of a group of key informants by a community member (for instance, teacher interviewing the children). This procedure should reduce the subjectivity of the answers by increasing the number of respondents and by using the same interviewer for a large number of interviews. In any case, a proper validation will reveal how well the key informants' opinions reflected the situation in their communities.

Simple questions: As the investigators do not meet with the respondents, only simple and straightforward questions can be asked. It is unlikely that it will be possible to identify a specific disease with a diagnostic algorithm (see above) because cultural or personal conceptions of the disease/symptom, its duration and intensity, would have to be elicited. However, the potential for incorporating diagnostic algorithms into the community questionnaire approach has not been explored.

Confidentiality: The confidentiality of information cannot be guaranteed by the indirect interview approach. This limits its applicability for diseases or health problems which are 'sensitive' in the given sociocultural context (for instance AIDS, other sexually transmitted diseases, infertility).

The time factor: Many diseases or health problems show a seasonal variation (like fevers, diarrhoea, ARI) which may affect how salient the problem seems to the community at the time of interview.

Conclusions

The community questionnaire approach described in this paper is of special relevance to primary health care goals because it is based on the beneficiaries' own perceptions and prioritization of health problems and addresses the need for a cost-effective, rapid and relevant flow of information. Its feasibility and cost-effectiveness is currently being demonstrated in a multi-country study of urinary schistosomiasis. Nonetheless, many methodological concerns remain to be investigated: the operational feasibility of the questionnaire distribution through different administrative systems, in different cultural and ecological environments; and the applicability of this approach to a larger spectrum of diseases and health problems.

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