From Kilimanjaro to the Himalayas: studies of health determinants in Third World communities

ABSTRACT - Studies in communities in developing countries may seem far from occupational medicine in the UK, but there is much in common. Poverty and inequality, and the lack of control and choices that follow, are important causes of ill health. The methodology described in this paper is based on the concept that measurement should itself contribute to development and empower people. It combines quantitative data from large scale household surveys with qualitative data from focus groups, key informants and institutional reviews. In Nepal, malnutrition in children is seen to be related not only to feeding practices but also to the status of women. In Uganda, highlighting areas of poor service delivery in health and agriculture has initiated dialogue about improving local delivery of these services. In Tanzania, corruption in public services adversely affects everyday life; the survey results are part of an integrated strategy to tackle the problem.

Field epidemiology in communities in developing countries may seem a long way from the UK and the practice of medicine as we know it in the UK. Yet there are lessons to be learnt from this work for both rich and poor countries. Huge numbers of people in developing countries, and many in developed countries, live in abject poverty; some might argue that the actions of governments in developed countries perpetuate this situation. Levels of preventable ill-health remain high, so that as we approach the millennium the aim of 'Health for all by the year 2000' seems a sick joke.

What are the important determinants of ill-health world wide? It is increasingly recognised that the causes of ill-health go well beyond the narrow traditional medical confines. Certainly there are 'personal' causes of ill-health, such as genetic make-up or 'bad luck'. But for most ill-health, particularly in the poorest countries, external factors play the major role. These include the environment, including of course the working environment, poverty and inequality. Inequality between rich and poor in a society is at least as important as absolute poverty as a cause of ill-health; and the gap between rich and poor is presently increasing in many developing and developed countries. An important corollary of poverty and inequality is lack of control, lack of real choice about important life issues. Lack of control at work is an important cause of ill-health.

There have been recent calls for doctors to 'stand up and be counted' about the adverse health consequences of poverty, much as they have previously done about nuclear weapons. On a practical level, interventions that help to increase the control ordinary people have over their lives could help to improve their health. Work such as that outlined here aims to help people to make choices and exercise control; the idea is to give people information in a form that facilitates decision-making. This is as relevant to people living in northern countries as to those in the south, although it is more clearly linked with short-term survival in the south.

Measurement to support development: Sentinel Community Surveillance

Sentinel Community Surveillance (SCS) is a community-based information management system, developed initially in Mexico and Central America. Its underlying principle is that measurement should support development; the process and results should assist people to improve their situation and take more control over it in the future. It recognises that facts, conveyed in a suitable form, can be powerful: having information about a problem, its likely causes and the most effective among possible solutions is the first step towards solving that problem. The ability to take accurate informed decisions, and to see the positive gains for themselves, can empower individuals, societies and planners. The particular features of the SCS methodology are shown in Table 1.

SCS concentrates data collection efforts: in time (a series of cycles in the sentinel sites, at approximately 6-monthly intervals); in space (representative communities are surveyed rather than collecting data from all communities); and in subject matter (each cycle focuses on one area at a time, rather than trying to collect all possible data on every occasion). SCS is a type of cluster survey methodology, but the clusters are large: typically 100–120 households per site, rather than the 10–50 used in most cluster surveys. And in the SCS method, there is no sampling within each site; every household is included. This gives greater statistical power for the data analysis, since each site is a small 'universe', and allows the linkage of data from the household questionnaires to other, mainly qualitative, data from the same sites. These data relating to the whole site are combined with the household data in a mesoanalysis, in which experiential and cultural aspects can be included, giving the 'why' behind indicators and pointing to how interventions need to be tailored to be acceptable and effective.

The SCS methodology has been used in some 40 countries across the world for different problem areas.

This article is based on the Joint Faculties Guest Night Lecture given at the Royal College of Physicians in February 1997 by Anne Cockcroft and FRCP FRCPEM, Consultant in Occupational Medicine, Royal Free Trust and School of Medicine, and Research Fellow, CIET International.
Table 1. Features of SCS methodology.

Data collected from cluster sites, selected to be representative of a district, a region or a country.
Repeated cyclical process, each cycle including planning and instrument design, data collection, data analysis and interpretation, and communication of results.
Each cycle focuses on particular area or problem, not trying to collect data on a wide range of problems.
Quantitative data from household questionnaires combined with qualitative data from focus groups, key informant interviews and institutional reviews from the same communities (that is, the data are coterminous) to allow a better understanding of the quantitative data. This combined analysis is called mesoanalysis.
Data analysis not only in terms of indicators (eg rate of childhood measles) but also in terms of risk (eg the risk of measles in an unvaccinated child compared with a vaccinated child).
Analysis gives results in a form that assists planning at household, community, district and national levels.
The same sites are revisited in subsequent cycles of data collection, allowing easy estimation of changes over time or as a result of intervention.
Each cycle of data collection and analysis requires a communication strategy to get the information to those who need it for planning.
Transfer of skills of data collection, analysis and communication over a number of cycles is an explicit aim.

Three examples are given here to illustrate how community-based measurement contributes towards improving the health and well-being of people living in poor conditions.

Nepal

Nepal is a small, poor country, lying between China and India, with a population of around 20 million people. Most people live in the southern plains, or terai, others in the central belt of hills, and relatively few in the northern mountains (the Himalayas). In 1994 SCS was begun in Nepal under the auspices of the National Planning Commission of HMG Nepal and with financial support from UNICEF. The process aims to assess progress against health and development goals and to provide insights into what can be done to improve matters. The cycles of SCS so far have focused on several different areas\textsuperscript{6-10}; the recent fourth cycle concentrated on childhood malnutrition and feeding practices.

Methods in SCS in Nepal

There are 144 sites in 37 districts of Nepal, selected by the Central Bureau of Statistics to be representative of the five development regions (East to Far West) and the three ecological belts (terai, hills and mountains). The sample includes about 17,000 households and nearly 100,000 people. The data collection methods used in the fourth SCS cycle in Nepal are shown in Table 2.

Table 2. Data collection in SCS cycle 4 in Nepal.

| Feature                          | Description                        |
|----------------------------------|------------------------------------|
| Household questionnaire          | 16,955 households (98,752 people) 8,060 children under 3 years 15,172 children under 5 years |
| Anthropometry                    | all children between 6 and 36 months old |
| Focus group discussions          | with mothers in each of 144 communities |
| Key informant interviews         | opinion leaders in each community |
| Institutional reviews            | at least one health facility serving each community and interviews with workers |

Child feeding and malnutrition

More than half (52\%) of Nepali children aged 6–36 months have a height-for-age more than two standard deviations below the median of the reference population (that is they are suffering chronic malnutrition or stunting); the equivalent figure for low weight-for-height (acute malnutrition or wasting) is 16\%. These measurements were taken around September, just after the monsoon season. There is a striking relationship with age (Fig 1), with the proportion of children who are stunted and wasted rising steeply to a peak at 21–24 months and then remaining stable or even falling in older children. At two years of age, 70\% of children are stunted but only 20\% of children aged 6–9 months are stunted, suggesting that this is not due to genetic factors (Nepali children are not ‘born small’). The implication is that there may be a problem with feeding practices for young children.

Fig 1. Stunting and wasting in relation to age among around 7,000 Nepali children aged 6–36 months. The percentages shown are the percentages of children in the age range who are more than two standard deviations below predicted height for age (stunting; chronic malnutrition) or weight for height (wasting; acute malnutrition).
Acute malnutrition (wasting) was found to have a marked geographic variation, with 8% of children in the mountains being wasted, 9% in the hills and 24% in the terai. In some districts of the terai, more than a third of children were suffering acute malnutrition (this is essentially an indication of famine conditions). Further investigation of this dramatic finding suggests that it probably reflects severe flooding during the monsoon in this area, already very borderline for food security.

Breastfeeding is nearly universal in Nepal, and often prolonged, so that more than half of children are still being breastfed at age 36 months. However, exclusive breastfeeding is short-lived: supplements are added for 20% of children between birth and three months. The nutritional quality of supplements, especially fluids, is often poor. Feeding frequency (even as reported by mothers) is sometimes inadequate: 15% of children are said to be fed four times a day or less. Children fed four times a day or less are more likely to be stunted than those fed more often (Fig 2). Feeding children more often could reduce the risk of malnutrition, provided there is someone around to feed them.

Less than a quarter of mothers of young children in Nepal are able to read and write. In this survey, a child whose mother is literate has half the risk of stunting or wasting, compared to a child whose mother is illiterate; this is not explained by feeding frequency but may be due to factors such as better quality food, better socio-economic circumstances of the household, or better position of the literate mother in the household. The poor status of women in South Asia may be an important cause of childhood malnutrition, because such women are less able to care for their children adequately. Focus groups in the SCS cycle revealed that nearly all women have to seek permission before doing something to benefit their child, and in nearly half the communities the focus groups reported that women are often beaten. Children from communities where women are frequently beaten are nearly twice as likely to be malnourished as those from communities where this was not highlighted as a problem. This provides evidence that the status of women does indeed have an important effect on children's nutritional status.

What pointers are there for action to reduce childhood malnutrition in these conditions? When the effects of variables in combination are analysed (using multiple logistic regression), several key factors emerge: frequency of feeding, literacy of women and violence against women. Many women are not able to feed young children more often because they go to work in the fields, leaving young children in the care of siblings. It is not enough to tell women to feed children at least six times a day; most already know they should do that. But they are often not in a position to make decisions about child care, being punished (sometimes violently) if they go against the wishes of the husband or mother-in-law. Addressing the issue of the status and treatment of women is difficult but could have significant benefits for children as well as women. Unfortunately, support and information from health care facilities is presently lacking. Reviews of institutions revealed that very few measured children and only about half could weigh children. More than half of health care workers believe that liquid food is better than solid food for young children and most reported passing this information on to parents.

A strategy for tackling malnutrition in Nepal is emerging, using these results among others. A network of government services and non-governmental organisations (NGOs) is being formed to share information and develop a communication strategy to get these results to those who need them in households, local administration and central government. Further SCS cycles will be able to assess the success or failure of the interventions in reducing malnutrition.

**Survey of health and agriculture services in Uganda**

Effective public services are an important way of improving and maintaining a reasonable quality of life, especially for people with few resources of their own. Uganda has recently been making serious efforts to reform its public services, virtually collapsed after the civil war and subsequent period. It was recognised that such reform was incomplete without seeking the views of those whom the services are supposed to serve. Thus a series of service delivery surveys using SCS methodology has been planned, the first commissioned by the Ministry of Public Service, with the financial support of the Economic Development Institute of the World Bank, and focusing on the key services of health and agriculture.

**Methods in the Uganda baseline SCS on service delivery**

The SCS process included a household questionnaire, focus group discussions in each community, interviews with key informants and institutional reviews, and in each district an interview with the district administration (see Table 3...

---

**Fig 2. Stunting in relation to feeding frequency (per day) among Nepali children between 6 and 36 months old (around 7,000 children).** The whole age range is shown, and six-month age groups within it.
for survey sample). In Uganda, most public services are provided at district level, with core funding and policy support from the central ministries.

Some findings of the Uganda SCS on service delivery

Over a third of households think that government health services are 'good'; nearly a third that they are 'average', nearly a quarter that they are 'bad' and the remainder are unable to give an opinion. The expectations of rural communities of their health services are not high. A third of respondents were unable to say what they think is wrong with the health services; they are not used to being asked their opinions. The commonest problem identified was lack of drugs in health facilities. Corruption was rarely mentioned as the main problem but in one district (Lira) 14% think corruption is the main problem. In most of the nine districts, households use government health services less than they use 'other' health services, including private clinics, pharmacies (self-medication), traditional healers and religious facilities. When asked about the most recent visit to a government health facility, most people said that drugs were available and the health worker was there. However, focus group discussions revealed that people usually only go to the facilities when they know from experience that drugs and workers are likely to be there (even if this is not very often). The availability of drugs was lower in Lira than in other districts. Households reported paying more for their visits than the semi-official 'user charges' levied by the health facilities; the difference comprises bribes to health workers for services. On a positive note, about three-quarters of households say they are willing to pay for improved health services. In Lira, less than a third are willing to pay. Focus groups described the difficulties people experienced in having access to health care and confirmed that people are willing to pay official charges but are not happy to pay bribes.

The results of the SCS in Uganda have been well-received, especially at district level, where they are already being used to set service targets for coming years, and as a basis for discussions between local administrations and representatives of the local population. The SCS process is being extended to cover all the districts of Uganda and will cover different public services in subsequent cycles. Corruption as one cause of problems with delivery of public services was confirmed in the SCS. Actions against corruption are continuing; for example, several senior administrators in Lira district have recently been sent on enforced leave after allegations of fraud, embezzlement and abuse of office.

SCS in Tanzania: corruption in police, judiciary, revenue and lands services

The disruption to everyday life caused by corruption in key public services affects the well-being of the communities who suffer it. They have to spend money they can ill-afford or simply do without the services they need. In Tanzania we used exactly the same epidemiological methods to study the spread of corruption in public services as have been used to study health effects elsewhere; in this sense, corruption is treated as a disease, with causes and, hopefully, a cure. The work was commissioned by the Presidential Commission Against Corruption and funded by the Economic Development Institute of the World Bank.

Methods for the Tanzania SCS on public service corruption

The instruments for data collection included a household questionnaire, focus group discussions, key informant interviews, and questionnaires administered to service workers in the police, judiciary, revenue and lands services (see Table 4 for survey sample). Preliminary analysis of collected data was carried out in each district and the results were discussed with district administrators, whose views were sought about the findings and how to improve matters.

Some findings of the Tanzania SCS on corruption in public services

Participants in focus groups expressed dissatisfaction with the services and anger about corruption. For example: 'Our children are dying because of the money we have to pay to these corrupt services'. More than half of household respondents who have used the services are not satisfied with the speed of the service; only around two-thirds had their business started (not completed) on the first day of visiting the service. Even fewer (about a third) are satisfied with the behaviour of the staff. Few of those who were dissatisfied made a complaint; less than 30% of them knew how to make a complaint.

All four services are supposed to be free and it is illegal either to give or receive a bribe in Tanzania. Nevertheless, around a third of service users admit paying service workers on their most recent service contact, almost all saying the money was requested by the service workers. Others may have offered money spontaneously and are reluctant to admit this. The amounts concerned are relatively small but certainly not negligible for people living at subsistence levels in rural communities. Service users who paid bribes did not fare better in their dealings with the services: they are twice as likely to see three or more staff; only half as likely to be seen within a day; much less likely to be satisfied with the speed and behaviour of staff; and six times more likely to think there is 'very much' corruption in public services. Perhaps these payments are
better termed extortion than bribes; people are eventually forced into paying them. Nearly two-thirds of households think there is 'very much' corruption in public services; almost the same proportion as among the service workers themselves (Fig 3). Households and district administrations had suggestions for reducing the problem of corruption, with many ideas in common, such as education of the public about their rights and how to use services, better salaries and conditions for service workers and tougher, more implemented anti-corruption laws.

Tanzania is making progress in dealing with corruption in public services. The first SCS cycle formed part of the report of the Presidential Commission Against Corruption, which was critical of some highly placed individuals as well as the system that allowed corruption to flourish. The President published the report almost immediately; some ministers have subsequently resigned and there is a 'clean up' underway at lower levels in the public services. Further cycles of the SCS are planned to assess progress and to see whether the changes have resulted in a better service to the public. The survey process is the first step towards giving a voice to the ordinary people of Tanzania, whose lives have been disrupted by the corruption and poor delivery of services.

Relevance to doctors in the UK

It is easy to be complacent about the situation in countries like the UK. Yet many of the conditions associated with poverty and inequality in developing countries exist here too. There are problems with the adequacy of delivery of essential public services, as all who have worked in the NHS in recent years are only too well aware. It is true that we have citizens' charters and patients' charters; but this is not a guarantee of involvement of service users in decisions about services or of increased choice for them. Corruption happens everywhere in the world, and recent prosecutions in the UK confirm its presence here. The fact that some people are being prosecuted is encouraging but does not necessarily ensure that there is a culture to discourage corruption in the first place. The gap between rich and poor in the UK is increasing and poverty is a major determinant of ill-health here. Many people living in the UK have little or no control over important aspects of their lives; messages about healthy eating, stopping smoking and taking regular exercise are not much use to them.

The encouraging message is that something can be done, even in the worst of circumstances, to help people regain some control. The experience of this work on a personal level has been harrowing in some ways, but mainly motivating and inspiring. The north can learn lessons from the south about how to use measurement to support development. Most people are willing and want to participate in decisions that affect their lives. They do not need much encouragement to use their energies to improve their situation. Data can be an enormously powerful tool. Given facts about their present situation, in a way that shows what might be done to improve matters, people can start to talk about how to make changes. People who collect data have a heavy responsibility to include the people concerned in the process, seek their ideas about solutions, give them the results in a form they can use, and encourage their inclusion in planning and decision-making that affects them. People need this every bit as much in developed countries of the north as they do in poor countries of the south.

References

1 World Health Organisation. Targets for health for all. Geneva: WHO regional office for Europe, 1985.
2 Wilkinson RG. Health inequalities: relative or absolute material standards? Br Med J 1997;314:591-5.
3 Haines A, Smith R. Working together to reduce poverty's damage. Br Med J 1997;314:529-30.
4 Bosma H, Marmot MG, Hemingway H, Nicholson AC, et al. Low job control and risk of coronary heart disease in Whitehall II (prospective cohort) study. Br Med J 1997;314:558-65.
5 Andersson N. Evidence-based planning: the philosophy and methods of sentinel community surveillance. CIET International/EDI World Bank: Washington, 1996.
6 Andersson N. Impact, coverage and costs: An operational framework for monitoring child survival and development emerging from two UNICEF projects in Central America. UNICEF: Guatemala, September 1985.
7 Andersson N. Meso-analysis: quantifying qualitative data from communities and services. In: Evidence-based planning: the philosophy and methods of sentinel community surveillance. CIET International/EDI World Bank: Washington, 1996:51-60.
8 National Planning Commission, HMG Nepal and UNICEF Nepal. Nepal Multiple Indicator Surveillance: Cycle 1, Health and Nutrition, 1995 (NMIS Report Series, number 1). Kathmandu, March 1996.
9 National Planning Commission, HMG Nepal and UNICEF Nepal. Nepal Multiple Indicator Surveillance: Cycle 2, Primary Education, 1995 (NMIS Report Series, number 2). Kathmandu, November 1996.
10 National Planning Commission, HMG Nepal and UNICEF Nepal. Nepal Multiple Indicator Surveillance: Cycle 3, Diarrhoea, Water and Sanitation, 1996 (NMIS Report Series, number 3). Kathmandu, June 1997.
11 Ramalingaswami V, Jonsson U, Rhode J. The Asian enigma. Commentary: the progress of nations. UNICEF, 1996:11-17.
12 Cockcroft A. Performance and perceptions of health and agricultural services in Uganda: a report based on the findings of the baseline service delivery survey. December 1995. CIET International/EDI World Bank, Washington, 1996.
13 Service delivery survey: corruption in the police, judiciary, revenue and lands services. Presidential Commission on Corruption, Government of Tanzania. Dar es Salaam, July 1996.

Address for correspondence: Dr Anne Cockcroft, Occupational Health and Safety Unit, Royal Free Hospital, Pond Street, London NW3 2QG.

THE IMPLICATIONS OF THE 'CALMAN' REFORMS OF MEDICAL TRAINING

Monday 9 March 1998
at the Royal College of Physicians,
11 St Andrews Place, Regent’s Park, London NW1

The introduction in January 1997 of the reforms in higher training of physicians met with a very mixed response from NHS consultants, trainees and medical academics. The Royal College of Physicians is holding an evening seminar on this topic which should be of interest to all those involved in these changes. Particular emphasis will be placed on the practical issues relating to the introduction of the SpR grade, and the impact of the changes on patient care, teaching and medical research.

Sessions include:

- Objectives of Specialist Registrar training
- Intrinsic faults in the new system: will it work?
- The effects on patient care and academic medicine

For further information, please contact:
Conference Office, Royal College of Physicians
Tel: 0171 935 1174 ext 252/300 Fax: 0171 487 5218