

Using Surveys for Management and Measurement of Health in Developing Countries**

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INTRODUCTION

This paper deals with the situation of health statistics in developing countries in the world. That situation differs greatly from that of the industrialized countries insofar as statistical systems of all kinds in developing countries, and especially health statistics are incomplete, underfinanced and underutilized. Resources for the collection, compilation and dissemination of data are scant. The importance of health statistics for planning and management is not well understood and therefore not well defined. Primary health care resources themselves are woefully deficient making the opportunity costs of data collection by health care professionals high, sometimes prohibitively so. The present potential of health service statistics is limited by the astonishing fact that on average 2/5ths of the populations in developing countries do not come in contact with the health care system, with obvious implications for the adequacy of service statistics. Newly emerging countries, many in the African region, are making it a priority to extend basic health care services to their growing populations. Within this context, one can see the increased importance of national population based information on the health status of the population, the demand for services, the performance of the system on delivering those services and the ultimate impact of Primary Health Care.

The potential of national household surveys for obtaining health information in developing countries is the focus of this paper. National household surveys have been a basic statistical feature for many decades in the industrialized countries, but only recently in the developing world. These surveys are usually characterized by national probability samples of the population with the data collection carried out on a continuing basis, covering a broad range of economic, social and demographic subjects.

The inclusion of health topics in national programmes has only recently begun to be considered by developing countries in a systematic way although the health interview methodology has been practiced in a more or less ad hoc fashion for some time. There is at the present time a relative lack of experience with national health surveys which is probably a reflection of the methodological difficulties they present. Notwithstanding these problems, general purpose national household surveys have a critical role to play, not just in assessing the health status of the population but also in looking at the various social and economic determinants and consequences of ill health and providing broad information for health planning and management. The National Household Survey Capability Programme

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(NHSCP) is a major undertaking of the United Nations system, to collaborate with developing countries to establish, through a systematic programme of household surveys, a continuing flow of integrated statistics on a recurrent basis to support the national development process and information priorities. It is designed to help countries build an enduring survey capability by developing statistical skills and survey instruments, and establishing a permanent infrastructure for survey taking. Nearly 50 countries have indicated an interest in the programme, and 22 countries are now participating in it.

FEATURES OF NATIONAL HOUSEHOLD SURVEYS

A continuing programme of household surveys offers many advantages which strengthen the household survey as a source of health information. In order to monitor progress in health conditions, it is essential to be able to take repeated measurements in a consistent and compatible manner so that they can be compared to reflect changes over time. Ad hoc surveys are costly because an infrastructure has to be established for each one and then dismantled, the most substantial costs being for data collection in the field, whereas the unit costs of a continuing programme decline substantially. As well as being expensive to implement, ad hoc surveys often collect data in isolation from other sources, thus linkages with other surveys and sources may be difficult or impossible. There is also likelihood that concepts, definitions and classifications may be incompatible.

Household surveys will be a significant source of essential health statistics, and in many cases are the only practical way in which reliable measures and rates for the whole country and its major population groups can be assembled at this time. Statistical systems must be able to identify vulnerable and high risk groups such as mothers, children, the elderly, and the most disadvantaged. Strategies for reaching the estimated two-fifths of the population who are presently outside the health care system in developing countries will require information on the size, distribution and characteristics of these unserved populations. This cannot be done only through the records of the health care system because the points of contact between the system and the public are too infrequent, poorly documented and not representative.

This situation was confirmed during a recent mission to Zimbabwe and Botswana and illustrates the varying conditions from country to country. In Zimbabwe, in rural areas clinics are principally used for obtaining immunizations on a schedule which brings children into contact with the clinic only during the first year of the child's life. Once the immunizations are complete the visits stop, at an age when malnutrition begins to become a serious problem, after children have been weaned and no longer benefit from the favourable nutrition and sanitary conditions of breastfeeding.

Health and related surveys have a variety of purposes - to obtain information on the health and nutritional status of the population and special client groups, e.g. mothers, children, shanty-town dwellers;

to estimate levels or differentials in morbidity and mortality; to assess health knowledge, attitudes and practices; and to measure the coverage and use of health services. Depending on whether a quick reading or an in-depth study is required and whether the special requirements can be accommodated, the health survey may be a module attached to a large-scale survey or a full-scale survey in its own right. Many specialized demographic surveys also have a specific health or nutrition component. Similarly, expenditure on health is usually part of a larger scale household expenditure survey. The survey method is not being put forward as a statistical panacea and the limitations of the use of general household surveys for measuring health are recognized but will not be dealt with here.

With a proper survey design, health related data will usually be representative of the total population and its larger geographic sub-divisions and major population groups. The different variables can be linked so that the associations between them can be studied, for example, the association between poor health and the education of the mother. However, the broad inter-sectoral programme of generating health statistics, which is implicit in this approach, requires a high degree of co-operation and co-ordination among health ministries, other interested agencies, and the national statistical offices.

Health surveys carried out under the auspices of national statistical authorities are more likely to be of higher statistical quality than those undertaken by agencies with limited statistical experience. The sample survey resources of the national survey programme, which will have been built up over time, will be available and will help to control survey errors. These resources can include an up-to-date master sample frame, a cartographic base, a national data collection field force and infrastructure, a cadre of trained sample survey specialists, a coding and data processing capability and facilities for printing and publication. Even when it is determined that the enquiry is not to be carried out through the national programme, some of the resources of the programme may be used.

One of the chief advantages of the multi-purpose household survey approach is the ability to link and to relate health variables with the other economic, social and demographic topics being collected from the various surveys over time to form a composite picture of household health and welfare. The integrating or linking aspects of these programmes include the development of a master sample from which the survey households are drawn, the use of common identification for matching individual questionnaires from different survey rounds, the use of a master frame of areas (sometimes villages) for linkage at the village or primary sampling unit level, the use of common stratification for analysis by agro-economic and geographic areas, the use, where possible, of a self-weighting design for ease in making estimates and combining estimates from different domains and rounds; and the use of common definitions and classifications from round to round.

INTEGRATION ATTRIBUTES OF NATIONAL HOUSEHOLD SURVEY PROGRAMMES

Having described briefly the essential characteristics of national household survey programmes, I will now turn to the issues related to integration.

The concept of integration of statistical activities underpins the philosophy of a centralized programme of national household surveys. Integration can be discussed along several dimensions, notably administrative and organizational, operational, and substantive. From the point of view of health the possibilities for substantive integration are the most interesting.

Substantive or topical integration occurs in two

ways: within the system of surveys and between data from the survey system and data coming from other sources. Within the survey system the master sample and the survey design are the essential elements determining the extent to which the various topics within a survey round, and the data between survey rounds, can be related. For example, Ethiopia's integrated household survey design collects agricultural, income, expenditure and demographic data from the same sample of households in one year thus providing a rich panorama of variables which can be linked and cross-tabulated at the household level for the same reference period. Health topics can easily be included in these surveys, and in fact have been in a number of countries.

Through a continuing programme, concepts, definitions and classifications can be standardized to facilitate data analysis, presentation and use. Similarly, in order for there to be effective integration between household surveys and other sources of health information, a great deal of work is needed to agree upon common terminology and methodology and to ensure that it is carried out according to these standards. In addition, the possibility of linking household information from the national sample surveys with health service data is feasible when the same identification and geographic coding schemes are used. Furthermore, the possibility of relating aggregate data at the regional or target group level to health service statistics is worth considering.

Conceptual Framework

National household survey programmes provide a conceptual framework which establishes a favourable environment for the integration of survey data which would not otherwise be possible with unplanned, ad hoc enquiries. Through common infrastructure and continuing institutional involvement of the national statistical offices, it is possible to standardize many of the elements, from survey round to survey round, which helps to achieve integration of data from different surveys. The ideal, of course, would be to collect all data for the same population covering the same reference period in one survey and then to repeat it periodically to assess changes over time. As this is not feasible, separate survey rounds, often with different households, spread over time, covering different topics, are required with some provision for bringing the data together and interpreting them. The basic units of collection and analysis, the household and the persons living in the household provide a conceptual framework for what should be collected within the household survey programme and are a convenient way of organizing the results for later linkage and analysis. Some of the major features of household survey programmes which facilitate integration are discussed below.

Common Definitions and Classifications

Firstly it is necessary to establish definitions and classifications which are common or at least comparable for all surveys. Where possible these should conform to census definitions as well since the census provides bench-mark population characteristics against which survey estimates are compared each 10 years. The census is also usually the basis for the sample frame from which the survey populations are drawn. It is essential that the basic household and personal characteristics such as definition of household, age, sex, occupation, literacy, income, household relationship be common, as these are the most frequent classification variables and are used for combining data from various rounds. To avoid confusing the user of statistical data it is also important to agree on and utilize common nomenclature in describing statistical results. A continuing programme of surveys has a better chance of guaranteeing standardization within the survey system. The countries implementing national programmes have available to them extensive United Nations statistical documentation on standards, classifications and nomenclature which has served to

standardize statistical series within and between countries. Of course, every setting is different so countries have found it necessary to modify these guidelines to suit their own needs and circumstances. This is best exemplified in the household/dwelling unit definition where in many parts of the world a household will include several huts which appear at first to be separate households but in fact serve different purposes within the same household or alternatively the case of the compound where a number of families may share common facilities and resources. The important issue for the national programme is that these definitions be clearly established in advance and consistently applied. Confusion about the definition of a household may be a particularly difficult problem when integrating data from different sources, e.g. sectoral service statistics with surveys, or even census and survey data.

Master Sampling Frame

Perhaps the most important basis for the later linkage of survey data is the development in advance of a master sample design. Many, although not all, countries with continuing household surveys have adopted the master sample approach (Morocco, Kenya, Zimbabwe, for example). The master sample is designed to serve the combined sample requirements of a selection of topics to be surveyed for the duration of a survey programme. These frames are based on a multi-stage sample of areas almost invariably drawn from the statistical areas from the most recent population census, thus a current census is a pre-requisite in most cases. The design of the master sample including the size and number of sample clusters and their distribution is determined such that the primary sampling units are large enough to provide for the survey requiring the largest sample, allowing for enough heterogeneity, while at the same time not making them so large that data collection costs are prohibitive.

Panel Surveys

One way of maintaining linkages and thereby continuity over time is through panel surveys which follow the same set of respondents in successive surveys over a period of years. In the United States fixed panels have been used in longitudinal surveys to observe for the behaviour of a study population over time. The national survey programme of some developing countries, also have de facto panel surveys insofar as they have elected for operational considerations to include the same sample of households in successive surveys without rotation as in Ethiopia. A variant on the panel approach involves a replacement of part of the sample after a specified period of time usually to coincide with a new survey round as with the United States current population survey. Operational considerations for sample rotation are one of the central methodological questions facing developing countries establishing national survey programmes.

Nested Surveys

With a master sample framework, nested survey designs are another way of interrelating health data at one point in time. Several topics can be covered in separate surveys or subsamples which are partially or fully overlapping. This approach is exemplified in the Morocco Income Expenditure survey conducted by the central statistical organization and the Moroccan national nutritional status survey which will be carried out by medically trained workers from the Ministry of Health in which there will be complete overlap of the national sample plus a supplementary sample of equal size (approximately 15,000 households) to increase the number of children observed. This nested approach will allow for the crossclassification at the household level of the nutritional status of children variables with the expenditure and consumption patterns of the household. At the same time, two data bases can be analyzed separately by their respective ministries.

Classification Systems

The use of standard, widely accepted classification systems is an essential pre-requisite for combining data from secondary sources when the microdata are not available for retabulation or reclassification. While this is sometimes the case with survey data, it is of utmost importance in regard to census data which would be too expensive in many cases to retabulate. It would be even more the case with aggregate service statistics, where the raw data usually remain at the collection point, be it a clinic or a school, and thus makes it virtually impossible to reaccess at a later stage. Beyond the data manipulation benefits of common classifications, standardized classification permits the building up of a body of information which can be related over time through the classification. A simple example is the accepted practice of classifying age into five year cohorts.

A more sophisticated type of classification system is one which is designed to track or model different characteristics or processes and relate transition over time. One example of this type of classification, and of particular relevance to this meeting, is the International Classification of Primary Care. The ICPC classifies health problems in the community and perceived need in the household, contact or reason-for-encounter with the clinic or hospital, professional diagnosis and the outcome - medical intervention and treatment. Thus, the patient can be tracked from perceived need before contact with the health care system right through to final outcome and comparisons made along the way. This classification presents very exciting prospects for application in the community, particularly in primary health care setting in developing countries. We are expecting to embark on an experiment to test its application in a household survey in Botswana.

Matching

Of course, underpinning the whole notion of bringing together disparate data resources is the concept of matching, whether it be exact matching of common microdata or statistical matching through common characteristics. These details will not be discussed here. Some further integration issues that will not be discussed here include the problems of common population denominator, common reference periods, standardized techniques for dealing with missing data, and adjustments for different selection probabilities among others.

CONCLUSION

In conclusion, whereas as recently as two years ago, it was difficult to find many examples of national health surveys in developing countries, it is now gratifying to be able to report on national health and nutrition surveys that are being initiated in a number of countries. These surveys will be of great use in assessing the health status of the population, its utilization (or not) of health services, and in relating them to other social and economic factors in the household and community, which may influence or be a direct consequence of poor health.

Among other possibilities, the potential of combining, in special circumstances, a health interview survey with a subsample of health examinations should be explored. Similarly, there is valuable information on health expenditures and health care utilization that can be collected by household expenditure surveys and greater use should be made of expenditure surveys by health planners. To make the most use of the current developments in national health surveys and methodologies in developing countries, a permanent international clearing house for the exchange of country experience should be established.

The next challenge for national statistical and health authorities will be to make the results available

without undue delay and, based on experience, to determine the best methods for obtaining information on general morbidity and illness manifestations of broad disease categories through lay reporting.

SUMMARY

National household surveys have been a basic statistical feature for many decades in the industrialized countries and more recently in the developing world. This paper deals with the potential of national household surveys for obtaining health information in developing countries. In this regard the United Nations National Household Survey Capability Programme (NHSCP) aims at collaborating with developing countries to establish a continuing flow of integrated statistics.

ZUSAMMENFASSUNG

Erhebungen über Gesundheit in Entwicklungsländern

Seit kurzem finden sich auch in Entwicklungsländern immer mehr Ansätze zur Verbesserung der Gesundheitsstatistischen Systeme. Die vorliegende Arbeit diskutiert

den möglichen Nutzen von nationalen Haushaltbefragungen zur Erfassung des Gesundheitszustandes der Bevölkerungen in Entwicklungsländern. Das diesbezügliche Förderungsprogramm der UNO ("UN National Household Survey Capability Programme NHSCP") hat zum Ziel, in Zusammenarbeit mit Entwicklungsländern ein System von kontinuierlichen Datenerhebungen zu entwickeln.

RESUME

Enquêtes de santé dans les pays en voie de développement

Dans les pays en voie de développement également des efforts de plus en plus importants sont mis en oeuvre pour l'amélioration du système des statistiques de santé. Le présent article analyse les possibilités d'enquêtes auprès de la population sur le plan national pour obtenir des données concernant l'état de santé des habitants des pays en voie de développement. Un programme de grande envergure des Nations Unies ("UN National Household Survey Capability Programme NHSCP") a pour but, en collaboration avec les pays en voie de développement, d'établir un système de statistiques sanitaires permanent.

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