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CRISIS BULLETIN

Nutrition Surveillance:
How does it work?

At its most recent meeting in April 2000, the United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition (ACC/SCN; see box below) presented the Fourth Report on the World Nutrition Situation[1] to key players in the field of nutrition. Those attending the meeting emphasized the importance of the timely collection of comprehensive nutritional data, the rapid processing and dissemination of the findings and their integration in policies and programs at national, regional and global levels.

Over the past 50 years, information systems to monitor and track financial and economic growth have been established. With globalization and rapid economic development throughout the world, information on economic development has become very advanced and up-to-date.

Some of the first systems to monitor nutritional status were also established more than 50 years ago. Advances in computer technology and analytical methods now allow surveillance systems to become more comprehensive and responsive. Because of our growing understanding of the importance of nutrition for social and economic development, more sophisticated surveillance systems must be designed and used to provide insight into the complex and rapidly changing situations that countries are undergoing. The moment has arrived to include key nutrition information into development indices and to accept the importance of regular, up-to-date nutrition information, similar to the current economic and financial systems.

With more than 10 years of experience in operating nutrition surveillance in Bangladesh, Helen Keller International (HKI) initiated a nutrition surveillance system in Indonesia in 1995, in collaboration with the Government of Indonesia (GOI). Through these surveillance systems, HKI has stimulated new discussions on how to use surveillance to identify the best indicators to monitor a particular situation. This work has strengthened linkages between different sectors/fields, ranging from agriculture and economics to health and demographics. This report, the first of the HKI Technical Programs Series, describes how the HKI/GOI Nutrition Surveillance System (NSS) works. Future reports will introduce novel techniques, methods and analyses that can be used in nutrition surveillance and health systems.

Aims of the ACC/SCN

The Administrative Committee on Coordination (ACC), which is composed of the heads of the UN Agencies, recommended the establishment of the Sub-Committee on Nutrition (SCN) in 1977 following the World Food Conference.

The aims of the SCN are:

- to raise awareness of and concern for nutrition problems at global, regional and national levels;
- to refine the direction, increase te scale and strengthen the coherence and impact of actions against malnutrition worldwide;
- and to promote cooperation among UN agencies and partner organizations.

For more information, please visit **www.unsystem.org/accscn**

[1] ACC/SCN (2000). *Fourth Report on the World Nutrition Situation*. Geneva: ACC/SCN in collaboration with International Food Policy Research Institute (IFPRI).

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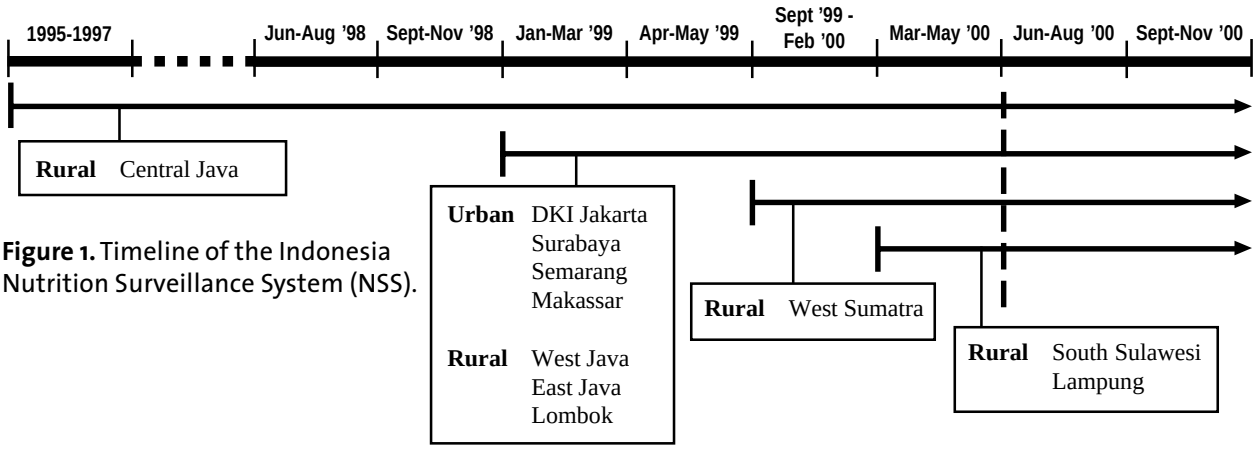


Figure 1. Timeline of the Indonesia Nutrition Surveillance System (NSS).

Nutrition surveillance activities were operated in Central Java from 1995 to 1997. The NSS restarted in Central Java in June 1998 and has gradually expanded to 7 other Indonesian provinces, covering both rural and urban areas, over the past two years (Figure 1, above). Data are currently being collected from urban slums in four major cities and seven rural provinces throughout Indonesia (Figure 2, below). Preparations have also begun to further expand the surveillance to two more provinces by late 2000. The NSS sites were selected based on the ongoing work of HKI and the United Nations Children's Fund (UNICEF) and in consultation with the Government of Indonesia and other organizations working in nutrition.

Different sampling frames have been applied for the rural and urban areas.[2] In the rural areas, a multi-stage cluster sampling design is used to obtain the random sample (see Figure 4, p3). For instance, Central Java consists of six ecological zones. From each zone, 30 villages are selected by probability proportional to size (PPS) sampling techniques. Each village provides a list of households with at least one child younger than five years of age. From this list, 40 households with at least one child less than five years of age are selected by fixed interval systematic sampling (SS). The total sample size for the NSS rural areas is 33,600 households.

The urban sample includes only households residing in a slum or shantytown. Two slightly different sampling frames are used in the urban slum sites. In Jakarta and Surabaya, '*kelurahan*' (villages) with slums are listed and 40 are selected using simple random sampling (SRS) techniques. Then, within each *kelurahan*, two to three '*Rukun Warga*' (RW; sub-villages) with slums are selected, for a total of 80-120 RWs, or sample clusters, per urban area. In Semarang and Makassar, the *kelurahan* strata is not used and 80 RWs with slum populations are randomly selected from each of the two cities. Within each RW, 30 households with at least one child younger than five years old residing in the slum are then randomly selected to participate in the survey round. The total sample size for the four urban slums is 10,800 households.

Information is collected quarterly in all sites (four rounds per year). The survey teams interview the households to obtain information on household composition, parental education and occupation, sanitary conditions, land and livestock ownership, food production and consumption, vitamin A capsule receipt, child and maternal morbidity and nutritional knowledge. Weight, height (or length, for

[2] Kirkwood B. Essentials of Medical Statistics. Oxford Blackwell Scientific Publications, 1988.

Figure 2. Map of the HKI/GOI NSS project sites.

Current urban slum sites – Jakarta, Surabaya, Semarang and Makassar – are located in DKI Jakarta, East Java, Central Java and South Sulawesi, respectively. These provinces, except DKI Jakarta, also include current rural sites monitored by the NSS. Other current rural project sites are the provinces of West Sumatra, Lampung, West Java and West Nusa Tenggara. The provinces of South Kalimantan and East Nusa Tenggara will be included as rural surveillance sites in late 2000.

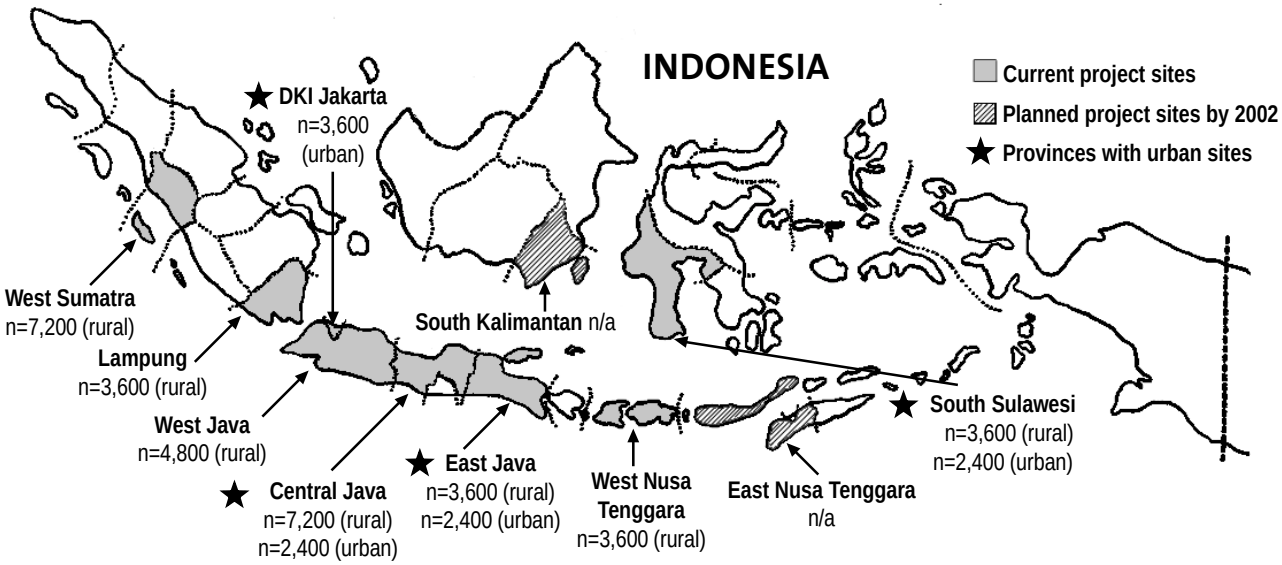
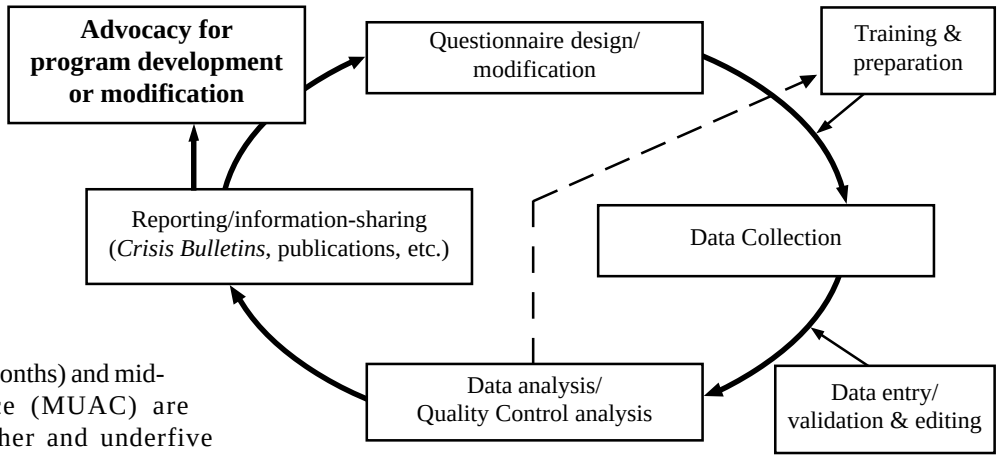


Figure 3. The nutrition surveillance process



children younger than 24 months) and mid-upperarm circumference (MUAC) are measured from the mother and underfive child(ren). Blood samples are collected from a random sub-sample of children and mothers by finger prick to measure hemoglobin concentration using the *HemoCue* device (Angelholm, Sweden).

HKI employs several mechanisms to ensure that the data are collected properly. The survey teams are carefully selected and trained and a field supervisor regularly supervises their work. In addition, a quality-control (QC) team makes random, unannounced visits on a sub-sample of the households that were already visited by a regular field worker. The data collected by the quality-control team are compared with those of the field worker, and the differences in observations are discussed with the fieldworkers before they embark on a new round of data-collection.

Data entry is conducted using SPSS Data Entry Builder for Windows version 1.0. During data entry, validity of values are checked automatically and, after data entry, further checks on the data entered are performed. Data analysis is conducted using SPSS 7.5 for Windows.

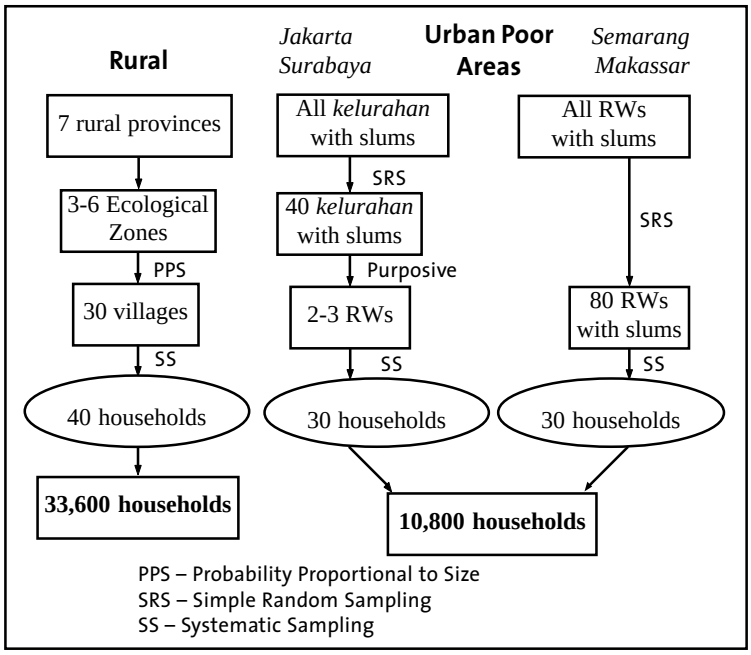
A special report (*Crisis Bulletin*) is prepared every month with the most up-to-date information on the nutrition/health situation. The information is shared with both local and international audiences to assist government and other organizations to develop or revise nutrition-related programs.

Through its work with government and NGO counterparts in Bangladesh and Indonesia, HKI/Asia-Pacific has become a leader in operating and using nutrition surveillance systems. In Indonesia, the NSS has been used locally and internationally to monitor the health and nutritional impact of the economic crisis. The NSS works with the DAI Food Policy Support Group and the International Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS) initiative and provides data to the World Health Organization's (WHO) global anthropometric database. The NSS is also now well positioned to serve as the framework to monitor a variety of development programs in Indonesia and other Asia-Pacific countries.

Conclusions and Recommendations

- The HKI nutrition surveillance systems have been useful tools to monitor nutritional status over time, to evaluate the nutrition and health impact of national or sub-national events such as economic crises and natural disasters, and to monitor development programs and conduct special surveys.
- Using the advanced technology that is available, surveillance systems must be comprehensive and innovative in the future in order to monitor the complex and rapidly changing situations occuring in the world.
- The NSS can be used as a framework to monitor development programs and to provide insight into other sectors of development.

Figure 4. Sampling framework for the HKI/GOI NSS.



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