Migration, Socio-Economic Status and Health Dynamics in Developing World Settings, Evidence from Demographic Surveillance Sites

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Introduction

Migration, socio-economic status and health dynamics are fundamentally interwoven population variables that play a critical role in shaping individual and household strategies across the developing world. Furthermore, an unpacking of these related variables is important for understanding development at a larger scale, because individual and household level behaviour determines health and economic patterns in both migrant- receiving and migrant-sending areas. There is presently a lacuna of demographic information available from underdeveloped countries that can address these migration, health and socioeconomic interrelations. Censuses provide de facto, national-level, cross-sectional data, which are invaluable, particularly when calibrated against other sources; national surveys allow deeper enquiry and can offer retrospective longitudinality, but neither of these methods are fitted out to address the complex, intertwining issues of social transitions in the way of prospective, longitudinal, observation systems.

Demographic Surveillance System sites are usually developed to evaluate medical interventions, for example vaccines, or insecticide-impregnated bed-nets. At the time of inception many surveillance sites perceived migration only as a necessary variable to produce accurate denominators. Nevertheless, all surveillance system sites are in possession of migration data. This resource is now being used by a network of developing world scholars in the INDEPTH network to conduct longitudinal migration analyses. The paper describes the capability of demographic surveillance systems to address questions on migration, socio-economic status and health dynamics. It also describes the INDEPTH network, a network of demographic surveillance sites in the developing world, and the new round of migration analysis underway. Illustrative examples of findings are given from two demographic surveillance site, namely the Agincourt demographic surveillance system in South Africa, and the Manhiça demographic surveillance system in Mozambique.

The data structure of a demographic surveillance system

Demographic surveillance sites are fieldwork and information system methodologies used to monitor population dynamics in small areas in developing world settings. Some key features include:

- Definition of the population
  The population is geographically defined. In the case of Agincourt it is the population residing in a sub-district of the rural Bushbuckridge district,

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comprising about 70,000 persons in 2005, located in the Mpumalanga Province some 500km northeast of Johannesburg and adjacent to the Kruger National park. In the case of Manhiça the DSS area is located in the disctrict of Manhiça, 80 kilometers North of Maputo, and the study population was 80,000 persons in 2005.

- Population coverage

The population covered by the surveillance is all persons resident in the study site thus requiring no sampling. In the case of Agincourt the population definition includes people linked as temporary migrants to the households in the sub-district. This enables, amongst other benefits, computation of the incidence of population events in the de jure population.

- Baseline census and vital events update

Fertility, mortality and migration data are based on a comprehensive registration system that starts with a baseline enumeration of the whole population. This is followed by a routine update of vital events involving repeat returns to all households in the population. The periodicity differs by site, with Agincourt site conducting annual update rounds and Manhica conducing two rounds each year. Variables measured routinely include: births, deaths, in- and out-migrations, household relationships, resident status, refugee status, education, antenatal and delivery health-seeking practices.

- Special modules

Special census modules are nested within each vital events update round as repeated or repeatable cross-sectional data collection. These provide further information relevant to lines of investigation on explanatory variables for understanding transitions or to screen for conditions of public health importance.

- Data Collection

During the census update rounds a trained fieldworkers interview the most knowledgeable respondent available at a visit to each household. Individual-level information is checked and updated on all household members. Any events that have occurred since the previous census update are recorded. Where appropriate, certain questions are directed at specific household members, for example maternity history or pregnancy outcome information is asked directly from the woman involved; a verbal autopsy is conducted with the person most closely involved with the deceased during their terminal illness to establish the most probably cause of death. Data quality checks include duplicate surveying of a random sample of households and rigorous checking of census forms at field and office levels.

- Software system

The software system consists of a relational database model, incorporating tables for individuals, households and villages, which have linked episode tables; demographic events are recorded in tables, and attribute data are time stamped and stored in tables. Data Entry occurs through a custom designed programme, which incorporates validation checks that are assessed when the data are entered. In Agincourt, this has been developed using the database software, SQL Server, and in Manhiça, in Foxpro.

- Temporality

There is an emphasis on prospective, longitudinal integrity and the time dimension is carefully represented in the fieldwork and information system. This enables, for example, the relatively accurate production of trends in mortality, fertility and migration variables and longitudinal study designs.

- Longevity

Some sites have been in the field for several years, which results in itself in important data improvements. Both fieldworkers and respondents become familiar with the study definitions and how to apply the rules in complex situations. Technically, databases can be upgraded and refined, as long as the basic structure remains consistent over time.

The INDEPTH Network

INDEPTH is a network of demographic surveillance sites representing a wide range of African and Asian countries (see figure 1). The collective database of all INDEPTH sites contains many millions of person years of observation. A remarkable diversity of contexts is covered by the network. For example, in Kenya you will find the Nairobi Urban D.S.S., run by the African Population and Health Research Centre, based in the desperately impoverished slums of Nairobi; while the Kenya Medical Research Institute/ Center for Disease Control (U.S.A.) run a site in Kisumu, in a rural district on the banks of Lake Victoria.
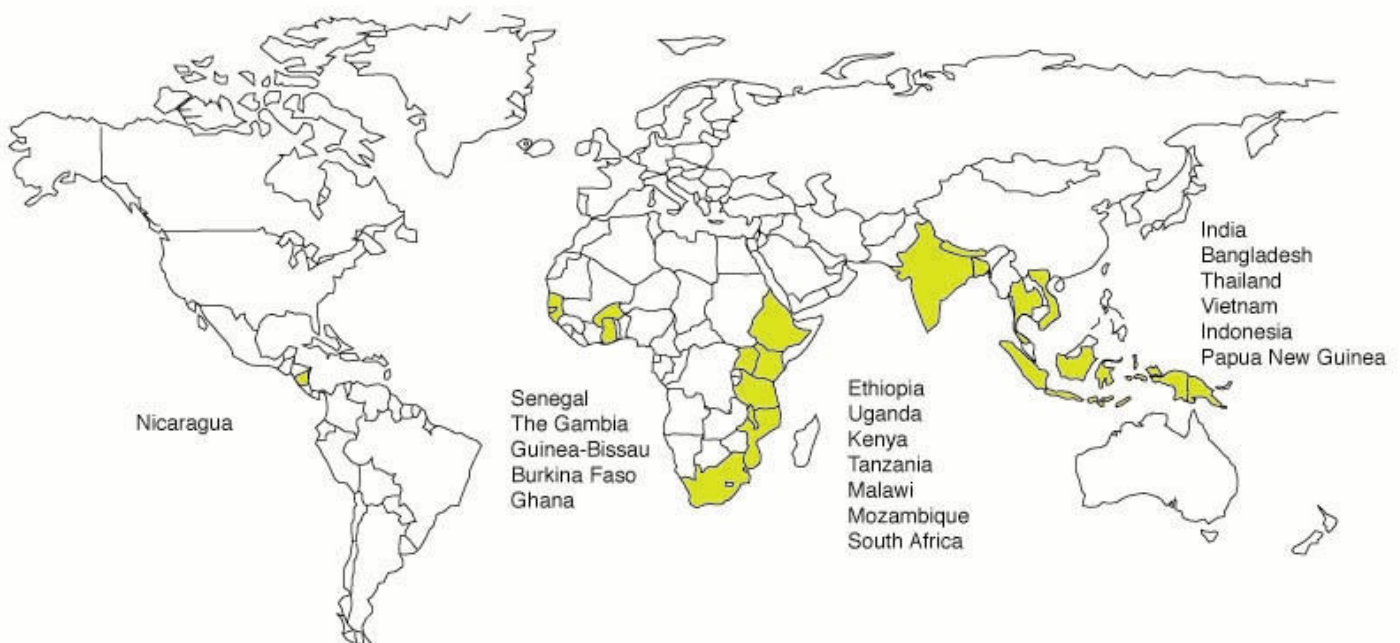

Figure 1. A global perspective on the INDEPTH Network

The Migration and Urbanisation Working Group in INDEPTH will produce a monograph which analyzes and compares the migration regimes in ten DSS sites in eight countries. Longitudinal analyses such as discrete time event history analytic models will be used to look at relationships between migration, socio-economic status and health dynamics. The expected scientific outcomes of the monograph are:

    a. Comparable age-sex migration schedules from each site.
    b. An analytic question addressed in each site chapter, using longitudinal surveillance data.
    c. Site chapters grouped into the themes to emphasize commonalities and divergences.
    d. Overview chapters on methodology and findings.

Illustrative findings

To illustrate findings from the forthcoming INDEPTH volume results will be presented from two southern African demographic surveillance sites, in Mozambique and South Africa.

From the Manhiça demographic surveillance site, in Mozambique, data will be shown which supports the phenomenon of migrants returning home to die. A discrete time event history model was conducted over the period 1998 – 2005. This showed that circular labor migrants returning home from South Africa and from the capital city of Maputo had a significantly higher mortality rate than non-migrants. The risk of mortality was relatively higher for male migrants with lower education and the risk was highest within first three months of return.

In the Agincourt demographic surveillance site in South Africa we examined the hypothesis that circular labour migration is strongly correlated with socio-economic status as measured by the household's possession of modern assets or consumer durables. We found that household modern asset wealth was strongly related to the presence of temporary migrants; however, traditional households seemed to withstand this dependence and ownership of livestock assets ameliorated the negative effect of not having a temporary migrant in the household.