

A Health and Demographic Surveillance System in a Low Socioeconomic Setting in Karachi, Pakistan

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Objective

The purpose of Karachi Health and Demographic Surveillance System (HDSS) is to generate longitudinal information on health and demographics of a geographically defined population of low socioeconomic status and provide platform for larger projects in efforts for diseases control.

Introduction

Karachi is the largest metropolitan, principal port city and commercial hub of Pakistan. Although there is a national database for registering vital events such as births and deaths but like in any other developing country the coverage of the system is sub optimal with many of birth and death not recorded.

Undercounting of these events leads to inaccurate estimates of vital indicators for informed decision and planning for health at local and national level. In these settings demographic surveillance systems have the potential to supplement data from the vital registration systems and provide avenues for research by virtue of having a well-defined cohort and continuous surveillance. The Department of Paediatrics and Child Health of Aga Khan University Karachi, Pakistan maintains health and demographic surveillance system at four peri-urban and one urban community in Karachi with focus on maternal and child health. This also provide platform for many epidemiological and interventional studies as well as vaccination programs using a well-established identification procedures providing linkage to health and socio-economic data. In 2010 the surveillance system was reorganized to follow INDEPTH methodology and guidelines.

Methods

The total catchment area is 19 square kilometers which is divided in 250 blocks with each block containing 200-250 structures. Each structure is defined as a building with single entrance which can have more than one family/household living in it. Community health workers (CHWs) visit each household on quarterly bases in the DSS area to identify new pregnancies and follow the pregnant woman until their pregnancy outcome.

We also conduct verbal autopsies for all stillbirths, children <5 years deaths and all adult female deaths (age 13-49 years) including maternal deaths to obtain cause-specific mortality. The strengths of our surveillance include rigorous data collection and processing for a large population in per-urban settings. Data entry at field sites, close monitoring and validation checks provide quality data. Fortnightly refresh training/ feedback secession for data collectors helps to identify and rectify inconsistencies in data and problems in data collection.

Results

There are total 50,520 structures with 41, 932 (83%) structures have people living in it. Since the completion of baseline in 2010 we record all vital events, migration patterns and various other socio-economic factors. Our surveillance covers a total population 274,856 comprising of 144,879 (53%) male, 12977 (47%) females, 67802 (25%) females between 15 to 49 years of age and 39028 (14%) children under 5 years.

In the year 2012, we identified 12557 pregnant women and captured 9136 newborns. This population has General Fertility Rate (GFR) of 135.1 and Crude Birth Rate (CBR) of 33.7. We recorded 216 still births, 413 neonatal deaths, 570 infant deaths, 665 deaths among children <5 years of age, yielding neonatal mortality rate (NMR) of 45, Infant mortality rate (IMR) of 62 and children <5 years of age mortality rate of 72 per 1000 live births. There were 34 maternal deaths recorded that yield MMR of 372 per 100,000 live births.

Conclusions

HDSS offers a medium term solution to the lack of vital event registration in low income countries and can provide important estimates to supplement data derived from cross sectional surveys done at national level. Surveillance can also be used to monitor trends and burden in diseases and conditions and strengthen the research capacities.

Keywords

Health and demographic surveillance system;; Karachi, Pakistan; Health surveillance; vital event registration

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