Profile: The Mbifta Health and Demographic Surveillance System.

Figure 1. Map of Mbifta HDSS showing the 4 locations.

Brief Introduction

The Mbifta Health and Demographic Surveillance System (Mbifta HDSS) was started as a major part of a collaborative project between the Institute of Tropical Medicine at Nagasaki University (also known as Nekken in abridged Japanese or NUITM in Kenya) and the Kenya Medical Research Institute (KEMRI). The Mbifta HDSS is located on the shores of Lake Victoria in Homa Bay county on the western part of Kenya. It is a mostly rural area found between latitudes 0° 21’ and 0° 32’ South and longitudes 34° 04’ and 34° 24’. It is about 400 km west of Nairobi, the capital city of Kenya and it covers 163.28Km2. The field station in Mbifta is located in the International Centre for Insect Physiology and Ecology (ICIPE) research compound.

The administrative locations covered in this system are Rusinga West, Rusinga East, Gembe West and Gembe East subdivided into 17 field interviewer areas. The Mbifta HDSS had a population of approximately 53,300 inhabitants and 11,151 households in 9th April 2012. The population lives on subsistence farming, small scale businesses,
fishing and keeping domestic animals. Two wet seasons usually occur annually from March to June and October to November, but the periods vary to some extent each year.

Regular data has been collected in the past using Personal Digital Assistants every 3 months which includes births, pregnancies, migration events, deaths. Coordinates are taken using GPS units to map all dwelling units during data collection. However, currently, we are in the process of developing a system of using Android-based tablets for data collection. Cause of death is inferred from verbal autopsy questionnaires. In addition, other health-related data such as vaccination status, socio-economic status, water sources, acute illness, bed net distribution are collected. Data is currently updated at 3 month intervals.

The residential unit is the compound which consists of one or more households together. Traditional houses are mud and grass thatch huts. Modern constructions, made of concrete and corrugated iron, tend to replace traditional houses. The households obtain their water from various sources such as the Lake Victoria, Ministry of Water taps, rivers, boreholes, open dams as well as rain water.

The HDSS has also provided a platform for conducting various other research activities such as entomology, research on neglected tropical diseases, environmental health projects which have benefitted the organisation as well as the HDSS community residents. Data collected is shared with the community members, health officials, local administration and other relevant organisations. Opportunities for collaboration and data sharing with the wider research community are available and those interested should contact shimadam@nagasaki-u.ac.jp.
Figure 2. The static population pyramid of the Mbita HDSS.

Demographic Characteristics

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<tr>
<td>Crude Birth Rate (CBR)</td>
<td>12.6 per 1000 population</td>
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<tr>
<td>Crude Death Rate (CDR)</td>
<td>4.1 per 1000 population</td>
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<td>Neonatal Mortality</td>
<td>6.4 per 1000 live births</td>
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<td>Post-neonatal Mortality</td>
<td>27.3 per 1000 live births</td>
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<td>Infant Mortality</td>
<td>33.8 per 1000 live births</td>
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<tr>
<td>In-Migration</td>
<td>59.7 per 1000 population</td>
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<tr>
<td>Out-Migration</td>
<td>43.3 per 1000 population</td>
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Objectives
The main objective is to provide a platform for population-based research on relationships between diseases and socio-economic, environmental factors and for evaluation of disease control interventions.

The specific objectives of the HDSS project are as follows:

i. To establish baseline data on the demographic, socio-economic, environmental and health characteristics of the communities in Mbita district in Kenya.

ii. To document all births, deaths, in-migrations, out-migrations, socio-economic status, pregnancy outcome and causes of death at given intervals.

iii. To investigate and evaluate interrelationships between health and socio-economic interventions and their impact on morbidity and mortality.

iv. To provide a platform for scientific studies in the prevention, management and control of parasitic, viral, bacterial and degenerative and lifestyle related diseases.

v. To provide a platform for education and training; and multidisciplinary research for health professionals, graduate students and researchers.

**Priority research areas**

The project integrates different scientific and operational research projects which aim at solving problems not in the HDSS site but also in areas where similar challenges prevail. The areas of interest include socio-economic, maternal and child health, water and sanitation, school-health, nutrition, bed net surveys, determining causes of death among others.

**Funders**

The Mbita HDSS is funded by Institute of Tropical Medicine, Nagasaki University (NUITM or Nekken) in Japan.

**Collaborators**

- Ministry of Health, Kenya
- Local Government, Kenya
• International Centre of Insect Physiology and Ecology (ICIPE)
• Japan International Cooperation Agency (JICA)
• The INDEPTH Network

Key publications


PHOTOS:

Field interviewer conducting an interview.
Field interviewer conducting an interview.

Field interviewer manager filling in a verbal autopsy questionnaire.