

CHAKARIA HEALTH AND DEMOGRAPHIC SURVEILLANCE SYSTEMS:

Generating data for national and global policy implications



The Chakaria HDSS covers **84,000** individuals living in **16,000** households in **49** villages (13 coastal villages and 36 hilly/plain land villages). The population comprises of 94% Muslims, 4% Hindus and 2% Buddhists. Majority of the population are Bangalees (99%) and only 1% belongs to an ethnic minority group known as *Rakhain*.



The Chakaria Health and Demographic Surveillance System (HDSS) of International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) was established in 1999 to understand how social, demographic, environmental and programmatic factors interact over time to produce health outcomes as well as to monitor the national and global health goals timely.

Located in the southeastern coast of the Bay of Bengal, Chakaria is an upazilla (sub-district) under the Cox's Bazar district of Chittagong division. The Chakaria HDSS covers 84,000 individuals living in 16,000 households in 49 villages (13 coastal villages and 36 hilly/plain land villages). The population comprises of Muslims (94%), Hindus (4%) and Buddhists (2%). Although the majority of the population of Chakaria HDSS area is Bangalee, it is also home to 1% of ethnic minority group called *Rakhain*. Being vulnerable to frequent natural calamities such as cyclones and flash floods, about a third of the households covered by Chakaria HDSS are displaced population from neighbouring areas.

Surveillance workers (SWs) visit households covered by HDSS every three months to record demographic events such as marriages, pregnancies, births, deaths and

migrations for all members of the household. In addition, health related information such as safe motherhood practices, childhood immunisation, sickness and health seeking behavior are also collected. Although, Chakaria HDSS started with paper-based data collection, it was replaced by a web-based data collection and management system in 2014 and to date, the HDSS incurs the lowest cost among members of the International Network for the Demographic Evaluation of Populations and Their Health (INDEPTH network) of 48 HDSSs around Asia, Africa and Oceania. Chakaria HDSS is manned by 17 SWs, one field research officer, one data management officer, a statistician and a demographer. Currently, five scientists are also involved in designing various research projects based on the HDSS framework.

In Bangladesh, where vital registration system is poor, the Chakaria HDSS is an ideal platform to monitor progress towards global health goals such as universal health coverage (UHC) and the sustainable development goals (SDGs). It is also aptly situated to track emerging global concerns, such as climate change, equity and migration.

Attaining UHC

UHC is a major goal for health reform in many countries and is one of the priorities for the Government of Bangladesh. icddr,b is committed to the principle that all people, irrespective of their social and economic position, should have access to affordable, acceptable, high quality and responsive health care.

Encouraging facility-based delivery as a strategy to increase skilled attendance at birth in order to reduce maternal and neonatal deaths has been a priority in the global maternal health agenda for decades. HDSS data showed that even

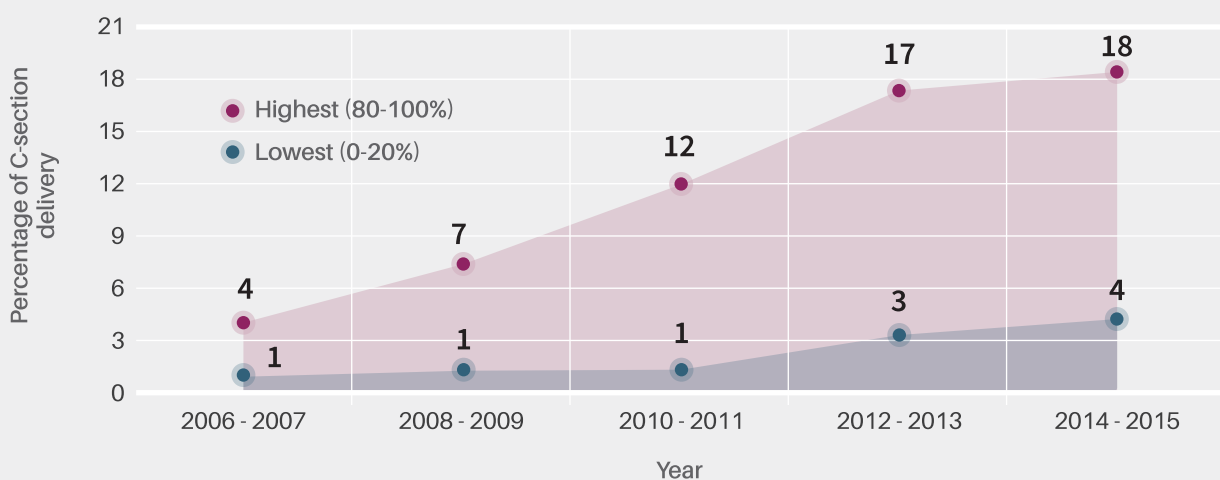
though facility-based deliveries have increased over time, the improvement was much higher amongst the rich while it was almost stagnant amongst the poor (Figure 1).

To combat complications during delivery, Caesarean-section is a life-saving procedure and although C-sections in the HDSS area have also risen over time, the rate of increase is alarmingly high amongst the rich, in comparison to the poor (Figure 2). This indicates cases of unnecessary C-sections amongst the wealthy, while there might be unmet needs for C-sections amongst the poor.

Figure 1: Facility-based delivery for lowest and highest asset quintiles



Figure 2: Caesarean-section delivery for lowest and highest asset quintiles





Monitoring SDGs

Achieving SDGs is a national and global priority. Chakaria HDSS is the only one in Bangladesh that monitors SDG indicators using longitudinal data. Since 2015, 16 SDG indicators are being monitored using Chakaria HDSS data and improvements have been seen in coverage of antenatal care and child immunisation, adolescent birth rates and secondary-education completion rate for girls.

Tracking the effects of climate change

In Bangladesh, a country bearing some of the worst effects of global climate change, water in coastal area are threatened by increased salinity which can result in increased exposure to sodium and therefore, increased consumption of salt. Compared

to the non-coastal population, people living in the coastal villages of Chakaria HDSS have higher salt intake; higher rates of spontaneous abortions/miscarriages (Figure 3).

Figure 3: The ratio of spontaneous abortions to live births (per 1,000)

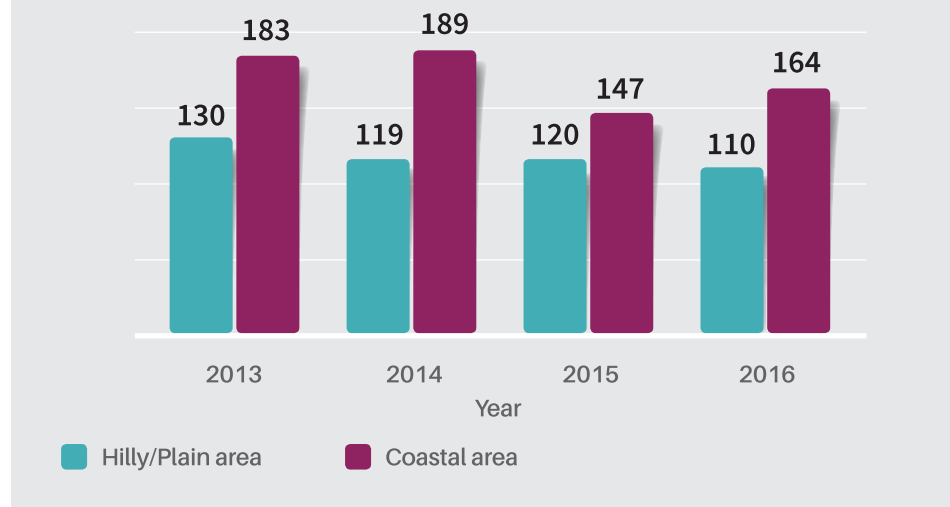
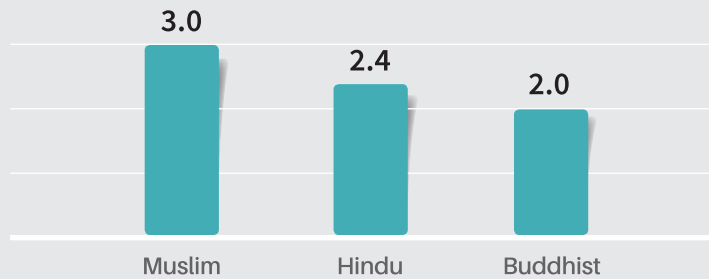


Figure 4: Total fertility rate for three religious groups, 2011-16



Fertility behaviour of religious groups

Fertility behaviour varies widely by three religious groups in Chakaria HDSS. Both unplanned pregnancies (Muslim-25%, Hindu -18%, Buddhist-12%) and total fertility rates (TFR) are lower amongst religious minorities (Figure 4). The aim of Bangladesh was to reduce fertility to 2.0 births per woman by 2016 and only the smallest religious minority group (Buddhist) has reached that level (Figure 4).

Current work/work in progress

Some of the projects/studies that Chakaria HDSS is a part of are described below.

- Amader Shasthya Micro Health Insurance project
- Impacts of Demand Side Financing Instruments on the Continuum of Care for Maternal and Child Health in India and Bangladesh
- Future Health Systems, to test feasibility, acceptability and sustainability of community score cards to monitor progress of public health facilities in Bangladesh.
- The CHES (Comprehensive Health and Epidemiological Surveillance System) programme, along with all 48 INDEPTH member sites.
- As part of the INDEPTH working group, the Chakaria HDSS is studying the cause of death of non-communicable diseases.
- Monitoring the non-specific effects of routine vaccinations on child health, along with 7 INDEPTH member sites

Collaborations

- Government of the People's Republic of Bangladesh
- Global Affairs Canada, Canada
- Swedish International Development Cooperation Agency, Sweden



- Department for International Development, UK
- Danish International Development Agency, Denmark
- INDEPTH Network, Ghana
- Medical Research Council, UK
- University of Portsmouth, UK
- Johns Hopkins University, USA
- Institute of Development Studies, UK
- Future Health Systems Research Programme Consortium, USA
- Center for Vitamins and Vaccines (CVIVA), Denmark
- Jeeon Bangladesh Ltd, Bangladesh



www.icddr.org
@icddr_b
/icddr
icddr,b
info@icddr.org

For more information about Chakaria HDSS please contact.

Syed Manzoor Ahmed Hanifi
Associate Scientist
Health Systems and Population
Studies Division
E-mail: hanifi@icddr.org

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