Designing and Implementation of

Clinical, Anthropometric and Biochemical (CAB) component of Annual Health Survey

Annual Health Survey

Background

- AHS was conceived in 2005 at the behest of National Commission of Population, PMO and Planning commission
- Objective was to yield benchmarks of core vital and health indicators at district level and to map changes therein on an annual basis.
- AHS was entrusted to office of Registrar General & Census Commissioner, India (ORGI) keeping in view of their expertise in implementing Sample Registration System (SRS)

Coverage under AHS

- 9 States, namely, Rajasthan, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand, Odisha, Madhya Pradesh, Chhattisgarh, Assam, Constitute:
  - 48% od country population
  - 59% of births
  - 70% of infant deaths
  - 75% of under 5 deaths
  - 62% of maternal deaths
- Though there were large inter-district variations, State level estimates from SRS were being used for formulating district level plans.

Key Features-AHS

- **Coverage:** All the 284 districts of 8 EAG States and Assam
- **Sample Units:** 20694 statistically selected sample units
- **Sample population:** ~18.1 million
- **Sample households:** ~3.6 million
- **Average sample HHs per district:** ~13000
- **Fieldwork:** Hybrid approach wherein fieldwork was outsourced and supervision done by ORGI
- 161 indicators on fertility, mortality and RCH

Annual Health Survey
Selected States

Allocation of Sample

State	No. of District	Sample Population per district	Total Sample Population	No. of Sample Units	No. of Households*
Uttarakhand	13	141,898	1,844,670	2,501	368,934
Rajasthan	32	50,678	1,621,710	1,841	324,342
Uttar Pradesh	70	49,564	3,469,464	3,927	693,893
Bihar	37	59,361	2,196,340	2,356	439,268
Assam	23	71,216	1,637,967	1,784	327,593
Jharkhand	18	104,862	1,887,520	2,109	377,504
Madhya Pradesh	45	48,937	2,202,161	2,557	440,432
Chhattisgarh	16	70,371	1,125,940	1,255	225,188
Orissa	30	71,377	2,141,319	2,364	428,264
Total	**284**		**18,127,089**	**20,694**	**3,625,418**

* No. of households estimated using 5.0 as average household size

Annual Health Survey (AHS)

- The first round of AHS was conducted in 2010-11 in all the 284 districts of the said 9 States
- In total, three rounds of the AHS have been completed during 2010-11, 2011-12 and 2012-13 and the results of all the rounds have been published.

CAB component of Annual Health Survey

CAB component of AHS

- Twelfth Plan and National Health Mission emphasize the need for evidence based district planning of interventions to bridge the gap between districts/States and to accelerate the pace of improvement in health and nutritional status.

- In a meeting held under the Chairpersonship of Secretary (Health & FW) in December, 2009 it was decided that it is essential to generate the estimates on morbidity and nutritional status of general population so that district level data on health and nutritional status is available for decentralized district based planning and monitoring of health and nutrition interventions

- Various issues relating to conduct of CAB Tests were discussed in the four meetings of the Technical Advisory Group (TAG) held on 30.12.2009, 18.1.2010, 21.05.2010 and 14.09.2010.

Recommendations of the TAG

- The TAG suggested that the survey should provide information on nutritional status, prevalence of anaemia of the population across sex, age and physiological groups.
- In addition, the TAG also suggested that the data on prevalence of hypertension , fasting glucose levels and use of iodised salt at household level may also be generated
- A Sub-Group of technical experts was constituted to work out the details on different aspects relating to CAB component of the survey and submit its recommendations to the TAG.
- The sub-group consisted of representatives from MoHFW, ORGI, National Institute of Health & Family Welfare (NIHFW), Nutrition Foundation of India (NFI), National Institute of Nutrition (NIN), Indian Council of Medical Research (ICMR) and other stakeholders

Sampling for the CAB component of the AHS

- The CAB Tests were conducted in a sub-sample of Primary Sampling Units in each of the 284 districts across 9 AHS States by selecting 12 PSUs in each district covering alternate households in the selected PSU.
- The households of the third round of AHS and new households as on date of CAB Survey which came up after the third round of AHS were covered.
- Within a selected household, all eligible members were covered for relevant tests.

Sample size

- CAB sample size was computed on the assumption that the prevalence of fasting glucose level is 4% with 10% Relative Standard Error (RSE) & 1.5 Design Effect.

- This was further inflated by 20% in order to take care of population increase since 2001 (on which the sample size of AHS is based).

- In order to ensure wider coverage, CAB survey was carried out in 12 randomly selected primary sample units (villages /urban enumeration blocks) in each district by covering every alternate HHs within a selected sample unit.

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Coverage-CAB

Coverage- All the 284 districts of the said 9 States

- **Sample Units per district -** 12
- **Sample Population -** 1.8 million.

- **Sample Households –** 360000.

- **Sample Households per district –** About 1500.

- **Sample Population per district-** About 6750.

Coverage (Contd…)

- Height/length and weight of all members of the household, women, men and children aged 1 month and above,
- Hb estimation of women, men and children aged 6 months and above,
- Blood pressure of all members of the household aged 18 years and above,
- Fasting blood glucose levels in all members of the household aged 18 years and above, and
- Household salt teating for iodine content to assess access to iodised salt.
- In addition information on physiological status of woman, infant and young child feeding practices and morbidity at the time of survey was to be collected to correlate these factors with the nutritional status of the persons surveyed

Sub Group of TAG

Subgroup held a series of meetings and worked out modalities regarding operationalization of CAB component and made recommendations on:

- **Development of Questionnaire**
- **Specifications of Equipment and consumables to be used in CAB survey**
- **Procurement, accuracy testing of the Equipments**
- **Distribution of Equipments and consumables**
- **Composition and Essential qualifications of survey teams**
- **Preparation of the training module and training programme for the survey personnel**
- **Arrangement for Testing blood samples for Hb and inter-lab quality assurance tests**
- **Working out the cost of training and Hb estimation in different centres**
- **Utilization of equipments after the survey**

Equipments

- Specification of different equipments wasfinalised in consultation with NFI, NIHFW & ICMR.
- Procurement of Equipments and Consumables was done Centrally through Hindustan Latex Limited using Two Bid System of Financial and Technical Evaluation of bids
- Committee for technical evaluation and finalization of equipment received with bids
- Accuracy testing of the individual equipments was done by NFI, NIHFW and 4 Regional Institutes of ICMR prior to distribution to Field Survey Agencies

Survey Agencies

- The survey agencies for conducting the CAB tests were selected through a separate RFP from the agencies having experience in conducting similar surveys or large scale demographic surveys.

- The Survey agency collected the data on physiological status of the women, infant feeding , morbidity , undertook the measurements of the persons in the household and collected blood sample for Hb estimation.

- The samples were sent to the designated institutes for testing.

- They also undertook data scrutiny and data entry

Manpower

- Separate manpower was hired for conducting CAB survey.
- Teams, each consisting of two health investigators and 1 supervisor, were formed.
- Personnel with background of nursing, laboratory technicians, AYUSH and other paramedics, Home Science Graduates, were selected for the survey.
- The Team worked for 5 days in a week in each PSU and they usually covered 3 PSUs in a month .
- A district was covered in about 4 -5 months.
- Each team covered two districts

Training

- Training of survey staff and quality assurance work during the survey was done by NFI, NIHFW and 4 Regional Institutes of ICMR
- Survey agencies were requested to send all district teams (each of three persons) for training.
- The training was skill based and was of 4 days duration and batch size did not exceed 15.
- Only those who were able to attain the required proficiency in measurement / conducting tests were selected
- The field surveys was started as soon as the trained persons reached the district along with the equipment and consumables

Role of ORGI

- ORGI was responsible for overall coordination
- The overall supervision of the survey was done by dedicated staff of ORGI posted at Headquarters at New Delhi as well as the Directorate of Census Operations (DCOs) in the AHS states.
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- Data receiving , cleaning and data analysis
- Preparation of fact sheets
- Report writing in collaboration with NIHFW , NFI and NIN

Role of NIHFW

Administrative

- Overall coordination of the CAB component of the Annual Health Survey
- Obtain funds from the Office of the Registrar General of India (ORGI) and ensure uninterrupted flow to partner institutions
- Releases funds to partner institutions after obtaining report of completed work and receipt of SOEs
- Report writing

Technical

- Coordination with the partner institutions for training of survey teams and other technical issues
- Training of field investigators of survey agencies
- Estimation of Hb by cyanmethaemoglobin method from dried blood spot

- **NIHFW was to ensure regular and continuous supply of equipment & consumables required and replacement of faulty equipment returned by survey agencies**

Health & nutrition service providers at State, district and block level

- **The local health and ICDS functionaries were informed about the survey**

- **their cooperation was sought for providing the needed care for persons who were detected as under/over-nourished anaemic, having high fasting glucose or hypertension.**

CAB AHS survey Benefits

To the individual

- Information on nutritional status, Hb levels, blood pressure and fasting glucose were provided to every member of the household who participated in the survey
- Infants and children got the MCPC with their weight marked
- Preschool children and pregnant and lactating women who were under-nourished were advised to access ICDS food supplements regularly and benefit from them
- Persons with over-nutrition, hypertension and high fasting blood sugar were advised to access health care professionals for investigations and management of the problem.

To the district programmes

- District programme officers have access to fact sheets providing nutrition and health status of the population enabling them to draw up district specific interventions and monitor progress

TO SUM UP

CAB component of AHS

- **CAB component of AHS has provided district specific information on magnitude of under- and over-nutrition, micronutrient deficiencies, hypertension and diabetes in all the districts of 9 States with poor nutrition and health indices.**
- **Based on these data, district specific Programme Implementation Plans can be drawn up, funded and implemented.**
- **Progress in implementation and impact of these interventions can be assessed by using the AHS CAB data as the base line.**
- **Successful models can be replicated.**

Thanks.....