



Health Information Systems

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Learning Objectives

- Define Health Information System
- Able to know the distinction between Data and Information
- Enumerate Uses of Health Information System
- Able to understand Requirements to be satisfied by Health Information System
- Enumerate Components of Health Information System
- Describe Sources of Health Information System

Health Information System



Definition- “***A mechanism for the collection, processing, analysis and transmission of information required for organizing and operating health services, and also for research and training.***”



Distinction between Data and Information



- **Data-** Discrete observations of attributes or events.
- **Information-** Data reduced, summarized or adjusted for variations and compared over time and place. (Processed Data)
- **Intelligence-** Information transformed through integration and processing with experience and perceptions based on social and political values.

Uses of Health Information System



1. **Measure** the Health status, quantify health problems, quantify medical and healthcare needs.
2. Local, national and international **comparisons** of health status.
3. **Planning**, administration and **effective** management of health services and programs.

4. Assessment of the effectiveness and **efficiency** of health services.



5. Assessment of the **attitudes** and degree of **satisfaction** of the beneficiaries with the health system.

6. **Research** in health and disease.

Requirements for Health Information System



1. Should be population based.
2. Avoid unnecessary agglomeration of data.
3. Should be problem oriented.
4. Should employ functional and operational terms.
5. Should express Information briefly.
6. Should make provision of feedback of data.

Components of Health System



Has several sub-systems-

- A. Information
- B. Indicators

In the following subjects-

1. Demography and vital events
2. Environmental health statistics
3. Health status
4. Health resources
5. Utilization of health services
6. Outcome of Medical care
7. Health finances



Sources

1. Census
2. Registration of vital events
3. Sample registration system
4. Notification of diseases
5. Hospital records
6. Disease registers
7. Record linkage
8. Epidemiological surveillance
9. Other health service records
10. Environmental health data
11. Health Manpower statistics
12. Population surveys



Census

- First census in India was in 1881.
- Conducted once in ten years.
- Process of collecting compiling and publishing demographic, economic and social data of the entire country.
- The supreme officer is the census commissioner for India.
- The latest census was in 2011 can be accessed [here](#).
- **Advantages-** Baseline data for planning, action and research.
- **Disadvantages-** Results not available quickly.



Registration of vital events

- Legal registration, statistical recording of the occurrence of vital events like births, deaths, marriages, etc.
- This is obtained in two ways-
 1. Central births and deaths Registration Act, 1969
 2. Lay Reporting



Sample Registration System

- **Dual Record System-**
 - A. Continuous enumeration of births and deaths by an enumerator.
 - B. Half-yearly independent survey by investigator-supervisor.
- Produces denominator required for computing rates
- Major source of health information
- Reliable information on birth and death rates
- The latest SRS bulletin 2019 is presented [here](#).



Notification of diseases

- **Purpose-** For prevention and/or control of the disease
- List of notifiable diseases vary from country to country
- Operative through **legal acts-** Madras Public Health Act, 1930
- **Reporter-** previously village headman, presently health workers
- **Advantages-** Provides valuable information regarding fluctuations in disease frequencies
- **Limitations-**
 - A. Under-reporting
 - B. Non-recognition of atypical and subclinical cases
 - C. Lack of facilities in rural areas

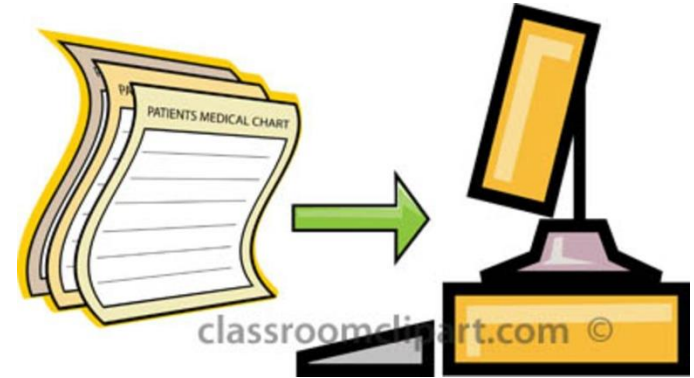




Hospital records

- Hospital statistics provide only the numerator i.e. cases so cannot give us any estimation of disease frequency in community.
- **Advantages-** Gives information on
 - (a) geographic source of patient
 - (b) age & sex distribution of different diseases and related duration of hospital stay
 - (c) association between different diseases
 - (d) cost of hospital care ,etc.

Hospital records (cont'd)



- **The drawbacks are-**

- A) Constitute only the tip of the iceberg(mild and subclinical are missed).
- B) Admission policy vary from hospital to hospital.
- C) Population served by the hospital cannot be defined(no precise boundaries to the catchment areas of the hospital)



Disease registers

- Permanent record of follow-up of cases.
- Valuable source of information about duration of illness, case fatality and survival.
- Helps to understand the natural course of disease especially chronic diseases.



Record Linkage

- A process of bringing together records relating to one individual or family originating in different times or places
- Example- Sickness-absence from work, prophylactic procedures, etc.



- Suitable method to study associations/etiological factors of diseases.
- **Drawback-** large volume of data gets accumulated.
- At the moment it is applied on a limited scale, for example- twin studies, genetic studies, chronic disease epidemiology., etc.

Epidemiological surveillance



- Established as part of health programmes.
- To report on occurrence on new cases, for example- RNTCP, NVBDCP, etc.
- Efforts to control the disease, for example- immunizations performed.



Other Health Service Records



- School Health records
- PHC records
- Private practitioners records
- MCH centre records
- Administrative records



Environmental health data

- Helps in identification and quantification of factors causing diseases.
- For example- Health statistics on:
 - a) Harmful food additives
 - b) Industrial toxicants
 - c) Consumption of material goods
 - d) Aspects of air, water and noise pollution.



Health Manpower Statistics

- Maintained by directorate of medical education, state medical/dental/nursing/councils.
- Census provides information about occupation.
- Institute of Applied Manpower Research estimates manpower from different sources of data.
- The planning commission gives estimation of active doctors for different states.



Population Surveys

- **Survey Types-**

- (a) For evaluating the Health Status- community diagnosis, distribution of health problems over time and space. They provide fundamental basis for planning and development of needed services.
- (b) For investigation of factors affecting health and disease.
- (c) Related to administration of health services.

- **Survey methods-**

- (a) Health interview
- (b) Health examination
- (c) Mailed questionnaire



Note to Students

- Must read- Chapter 18 (Pg. 839-843) of Park's Textbook of Preventive and Social Medicine, 25th edition .
- Go through the following links for a better understand of the Health Information Systems-
 - (a) Census- <http://censusindia.gov.in/2011-Common/CensusData2011.html>
 - (b) SRS bulletin- http://censusindia.gov.in/vital_statistics/SRS_Bulletins/SRS_Bulletin-Rate-2017-May_2019.pdf



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