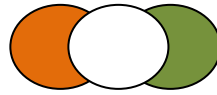Post Graduate Certificate Course in Health System and Management - 2013

Module 2: Chapter 3

HEALTH INDICATORS

Indian Association of Preventive and Social Medicine

Gujarat Chapter

HEALTH INDICATORS

Learning objectives:

After learning this chapter participants will be able to

1. Know what are health indicators and their types
2. How they are formed & what are their uses
3. Able to form indicators on other health programs on their own

Introduction

Definition: A variable which helps to measure changes, directly or indirectly (WHO, 1981).

Health indicators summarize data which have been collected to answer questions that are relevant to the planning and management of health programmes. The indicators provide a useful tool to assess needs, and monitor and evaluate programme implementation and impact. The indicators capture the occurrence of events such as live births, the prevalence of a characteristic in persons such as the use of contraceptive methods or the prevalence of characteristics of a health facility, for example, health centres which provide family planning services. The indicators are expressed in rates, proportions, averages, categorical variables or absolute numbers.

In order to assess the achievements of goals and targets, it is necessary to establish a system for monitoring and evaluation. This involves the definition of essential indicators and guidelines on how to use them. With the expansion and evolution of health services, many agencies have been working on developing indicators. As a result, there have been a number of indicators put forward by these organizations, in addition to existing national indicators.

With the trend towards the integration and development of comprehensive health programmes and their decentralization, the responsibility for planning and management of programmes has been placed at the sub national level. Therefore, indicators are not only required at the national level but also at the sub national level to monitor the effective implementation and evaluate the impact of programmes.

*Types of Indicators***:**

 There are Five types of indicators:

1. Count / Number   →   Measure without a denominator
2. Proportion (%)   →   Numerator is part of denominator
3. Rate   →   Frequency of occurrence of an event during a specific time, usually expressed   per "k" population (k=1000, 10000,…). Rate is used to estimate probability or risk of occurrence of a disease or to assess the accessibility or coverage of health care system.
4. Ratio (per k)   →   Measure for which numerator is not included in denominator (e.g : sex ratio per 100 ; beds population per 1000) .
5. Index   → Aggregation of measurement of specific indicators. (e.g. : Health   development index ,summary   measures for Health Population, malarial indices)

CRITERIA FOR SELECTING INDICATORS

A good indicator has a number of important attributes and those recommended by the World Health Organization (WHO, 1997c) are outlined below:

1. To be useful an indicator must be able to act as a "**marker of progress**" towards improved health status, either as a <u>direct or proxy measure of impact</u> or as a measure of progress towards specified process goals.
2. To be **scientifically robust** an indicator must be a **valid, specific, sensitive and reliable** reflection of that which it purports to measure. A <u>valid</u> indicator must actually measure the issue or factor it is supposed to measure. A <u>specific</u> indictor must only reflect changes in the issue or factor under consideration. The <u>sensitivity</u> of an indicator depends on its ability to reveal important changes in the factor of interest. A <u>reliable</u> indicator is one which would give the same value if its measurement was repeated in the same way on the same population and at almost the same time.
3. To be **representative** an indicator must adequately encompass all the issues or population groups it is expected to cover.
4. To be **understandable** an indicator must be simple to define and its value must be easy to interpret in terms of health status.
5. To be **accessible** the data required for an indicator should be available or relatively easy to acquire by feasible data collection methods that have been validated in field trials.

6. To be **ethical** an indicator requires data which are ethical to collect process and present in terms of the rights of the individual to confidentiality, freedom of choice in supplying data, and informed consent regarding the nature and implications of the data required.

CONCEPTUAL FRAMEWORK

An important objective of a conceptual framework is to depict clearly the desired programme and population outcomes targeted by interventions. A conceptual framework for any health program helps those involved in programme design, management and implementation to select the appropriate input, process, output and impact indicators to monitor and evaluate whether and how these interventions have helped to achieve the objectives.

FIVE INDICATORS CATEGORIES:

(1) SOCIO-ECONOMIC ENVIRONMENT Indicators focusing on population structure, economics, education, employment, water, sanitation, pollution, etc.

(2) INPUT indicators

In a health programme, specific interventions directed at achieving the desired outcomes need to be supported by a conducive environment, where policies and organizational resources are in place. The inputs needed to meet the desired implementing processes are resources and the policy environment. Resources include manpower, material and financial resources. Policies and administrative procedures include national policies and legislation with regard to health to create an enabling environment for the effective implementation of activities. Health indicators directed at policies and administrative issues are designed to show whether the enabling national policy conditions and guidelines are in place to support appropriate Health interventions. All these policy indicators require qualitative information on the existence of policy statements or legislation in support of Health goals.

(3) **PROCESS Indicators** refers to *quality* of health activities.

Implementation of Health activities is the process through which the desired interventions are carried out to achieve programme outputs. The process indicators of health program address operational issues and questions that can be answered with programme level data and measures. The indicators may enable policy makers and programme managers to assess and improve Health services so that clients can achieve their health intentions.

1. Environmental indicators: demographic characteristics, economic & socio-cultural context.

2. Inputs →	3. Process →	4. Outputs →	5. Outcomes
Resources	Services	Results	Impacts
Manpower	Contacts	Knowledge	Fertility
Material	Visits	Acceptance	Mortality
Money (Finance)	Examinations	Practice	Morbidity
Policy	Referrals	Utilization	prevalence

Policies : National Policies & Legislation

(4) **OUTPUTS Indicators** refers to the *results achieved* in terms of services, cares or goods. They could be divided in following three types:

(a) **Functional output indicators**: which measures the number of activities conducted in each functional area.

(b) **Service outputs indicators**: which measures the adequacy of the service delivery system in terms of *accessibility*, *quality and image*.

(c) **Service utilization indicators**: which measures the extent to which the services are used.

If the activities of a Health programme are implemented as desired, then the resulting outputs should contribute to achieving expected impacts. The output indicators of a Health programme are knowledge, utilization of services, etc.

(5) OUTCOMES Indicators refer to "**changes**" observed at the population as a "result" of given interventions. There are two following types of outcomes: EFFECT Indicators and IMPACT Indicators

(a) Effects Indicators relating to measure of change in knowledge, attitude and practice (behavior change including coverage) occurred in short and medium term (2-5 years).

(b) **Impact Indicators** focusing on change in health status due to the effects of interventions/actions and occurred over the long-term (over 5 years).

The effect of Health intervention introduced through programme activities and the resulting outputs must have an impact on the population. Therefore, the outcomes of a programme must be eventually measured at the population level. The impact indicators that measure changes at the population level are fertility, mortality and morbidity rates.

Specific use of different indicators:

The INPUTS and PROCESS indicators and secondly the OUTPUTS indicators are used for MONITORING process.

The OUTCOMES Indicators are especially used for EVALUATION process which uses also the general findings of monitoring particularly the outputs indicators achievements.

III. METHODS OF DATA COLLECTION

For the purpose of understanding, we shall relate examples to reproductive health indicators only.

Indicators summarize data collected to answer questions relevant to the planning and management of health programmes. Thus the compilation of indicators depends on the availability of data (both quantitative and qualitative) from a number of sources. These include routine service statistics, census and vital statistics reports, special studies and sample surveys. Indicators based on programme level record keeping are important to ongoing management concerns as well as to evaluate programme outputs. Population based indicators are needed to measure programme effects and impacts.

A. Management information and service statistics systems

Through the above systems, data are collected on such indicators as the number of clients, number of visits, methods of family planning accepted, workers employed, facilities used, etc. This data source also provides information on internal programme features, such as training, logistics, supervision, etc. The programme level measurements of inputs and activities provided by these data sources enable the construction of input and process indicators, which in turn serve as the basis for evaluation.

B. Population census

The data collected at population censuses such as population by age and sex, marital status, and urban and rural residence provide the denominator for the construction of process, output and impact indicators.

C. Vital registration system

The vital registration system collects data on births, deaths and marriages. These data are available by age, sex and residence. These data provide the numerator for the construction of process, output and impact indicators.

D. Population-based surveys

The programme-based data very often lack representativeness in that they provide information only on those who use services. Similarly, data from the vital registration systems and censuses also may be deficient in coverage and content. Therefore, the need for population-based data not only fills the gaps in data systems of other sources but also validates programme indicators such as contraceptive use rates, fertility rates, etc.

IV. LIST OF SELECTED INDICATORS

The following provides illustrative lists of selected input, process, output, and impact indicators to enable readers to understand the concepts that are used to monitor and evaluate health programmes. For the purpose of understanding we shall relate examples to reproductive health indicators developed by UNFPA into input, process, output and impact indicators (Abeykoon, 1999).

A. Input indicators

(a) Percentage of health personnel trained in midwifery

→Definition:

The number of health personnel who are trained in midwifery as a percentage of all health personnel who attended delivery in a given period and in a given geographical area.

→It is calculated as:

$$\frac{\text{Number of health personnel who are trained in midwifery}}{\text{Number of all health personnel who attended delivery}} \times 100$$

→Data requirements:

The number of health personnel who are trained in midwifery in a given period and in a given geographical area; and the total number of health personnel who attended delivery in the same period and in the same geographical area.

→Data sources:

Health service statistics; Facility-based surveys

→Uses and limitations:

It is an indicator of the quality of services. The WHO defines "trained midwifery" as those who have successfully completed a prescribed course of midwifery and are able to give the necessary supervision, care and advice to women during pregnancy and labour, and in the post-partum period, and conduct deliveries and provide care for infants.

(b) Percentage of public sector expenditures on contraceptive commodities

→Definition:

It is defined as the percentage of public sector expenditure on contraceptive commodities to the total expenditure on contraceptive procurements during a given year.

→Data requirements:

Public sector expenditure on contraceptive procurements during a year; and the total expenditure on contraceptives procurements during the same year.

→Data sources:

Ministry of Health statistics on expenditures on contraceptives; Donors, NGOs and commercial sector expenditures on contraceptive commodities.

→Uses and limitations:

This is a measure of the commitment of resources by a country to its reproductive health programme.

(c) Percentage of service delivery points offering at least two methods of family planning.

(d) Percentage of service delivery points (SDPs) which routinely screen and provide referral for infertility

(e) Percentage of trainees provided with knowledge and skills on RH in a given year

(f) Percentage of service delivery points stocked with family planning commodities according to needs.

(g) Number of referral facilities providing essential and emergency obstetric care per 100,000 married women in the reproductive age group

(h) Number of service delivery points offering family planning services per 10,000 women in the reproductive age group.

(i) Existence of the national population and reproductive health Policy

(j) Government policy on abortion

B. Process indicators

(a) Proportion of service providers trained in family planning and reproductive health

Definition:

The number of service providers trained as a percentage of all service providers in family planning and reproductive health during a given period.

Data requirements:

The number of persons in service delivery points who were trained in family planning and reproductive health during the reference period; and the total number of service providers in the area of family planning and reproductive health.

Data sources:

Service statistics; Records on training programmes.

Uses and limitations: The indicator provides information on the strength of IEC (information, education and communication) and reproductive health services.

(b) Percentage of births attended by trained health personnel

Definition: Percentage of births attended by trained health personnel in a given period.

The indicator is calculated as:

Number of births attended by trained health personnel in a year

-- x 100

Total number of live births occurred during the same year

Data requirements: Number of births attended by trained personnel during a specific year; and the total number of live births occurred during the same year.

Data sources: Health service statistics; Birth registration data.

Uses and limitations: The indicator is useful in assessing maternal and child health programme.

(c) Percentage of clients given counselling on family planning at SDPs during a year

(d) Percentage of pregnant women who had at least two prenatal visits attended by trained health personnel during the last completed pregnancy

(e) Percentage of contraceptive supplies that are wasted

(f) Percentage of communication material disseminated to target Audiences

(g) Percentage of training programmes on RH that achieves the learning objectives

(h) Percentage of follow-up visits by contraceptive users to the total number of continued users of a particular method

(i) Proportionate share of contraceptives distributed to users by NGOs

C. Output indicators

(a) Contraceptive prevalence rate

Definition:

The proportion of currently married women aged 15-49 years who are currently using a contraceptive method at the time of the survey.

The indicator is calculated as:

Number of currently married women aged 15-49 years using a contraceptive method

-- x 100

Total number of currently married women aged 15-49 years

Data requirements:

Number of currently married women aged 15-49 years using a contraceptive method; and the total number of currently married women aged 15-49 years; The data should refer to a given point in time. The contraceptive prevalence rate can also be calculated by specific method and by age group if the data are available.

Data sources:

Population-based surveys, such as Demographic and Health Surveys (DHS).

Uses and limitations:

The indicator measures the prevalence of contraceptive use taking into account all sources of supply and methods of contraception available to the target population. It is a widely used indicator to assess the level of contraceptive use in a given population.

(b) Number of new acceptors of modern methods of family planning

Definition:

Number of clients who accept for the first time in their lives any modern method of contraception in a given period, usually one year.

Data requirements:

Records of clients who accept a family planning method for the first time during the given period.

Data sources:

Service statistics

Uses and limitations:

The indicator measures the effectiveness of the family planning programme to attract new clients form the target population. As the contraceptive prevalence rate reaches a high level (e.g. over 70 per cent) the number of new acceptors is likely to decrease because of the fact that most of the eligible couples have been recruited as users.

(c) Percentage of women in reproductive ages with knowledge of the modern methods of contraception

(d) Proportion of high-risk births to women

(e) Percentage of women aged 35 years and above with knowledge of the need for annual screening for breast and cervical cancer

(f) Proportion of children aged 9-12 months who are fully immunized

(g) Prevalence of breast cancer among women aged 35 years and over

(h) Unmet need for family planning

(i) Mean desired family size

D. Outcome indicators

(a) Total fertility rate (TFR)

Definition:

Total number of children a woman would have by the end of her reproductive period if she experienced the currently prevailing age-specific fertility rates throughout her childbearing life.

Data requirements:

Number of live births occurred during a reference period classified by five-year age group of women; and the total number of women classified also by five-year age group.

Data sources:

Vital registration; Population census; Population-based surveys, such as DHS.

Uses and limitations:

TFR is one of the most widely used fertility measures to assess the impact of family planning programmes. The measure is not affected by the age structure of the female population.

(b) Maternal mortality ratio

Definition:

Number of women who die as a result of childbearing in a given year per 100,000 live births. Maternal deaths are those caused by complications of pregnancy and childbirth.

Data requirements:

Number of maternal deaths occurred during a given period and given population; and the total number of live births during the same period and same population.

Data sources:

Vital registration; Health survey.

Uses and limitations:

The indicator is widely used as a measure of maternal health. It is also used to indirectly assess the effectiveness of antenatal and post-natal care for mothers.

(c) Neonatal mortality rate

(d) Induced abortion rate

(e) Adolescent fertility rate

(f) Infant mortality rate

(g) Perinatal mortality rate

(h) Annual population growth rate

(i) Life expectancy at birth

(j) Prevalence of RTIs/STDs by type in a defined target population

(k) Prevalence of HIV infection in a defined target population