Research Article

Vital Statistics in India: Sources and Implications for Public Health

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Abstract Vital statistics, including data of births and deaths, are necessary for demographic analysis and public health planning. In India, the Civil Registration System (CRS) and the Sample Registration System (SRS) are the important sources. This study emphasise the importance of vital statistics in measuring fertility, mortality, and life expectancy, and their role. Populations in rural and marginalized populations reduce the reliability. Management of registration infrastructure, increasing awareness, and ensuring interdepartmental coordination are important to enhance data quality. Reliable vital statistics are necessary for effective health planning in India.
Keywords *Vital Statistics; Birth Rate; Death Rate; Life Expectancy; Mortality*

Introduction

The word 'Statistics' derived from Latin word 'Status' means 'state or condition', & the word 'Vital' derived from Latin word 'Vitalis' means 'of or belonging to life'

Vital statistics is accumulated data gathered on live births, deaths, migration, fetal deaths, marriages and divorces. The most common way of collecting information on these events is through civil registration, an administrative system used by governments to record vital events which occur in their populations. Efforts to improve the quality of vital statistics will therefore be closely related to the development of civil registration systems in countries. Statistics emphasises both collection of raw data and interpretation from that data. [1]
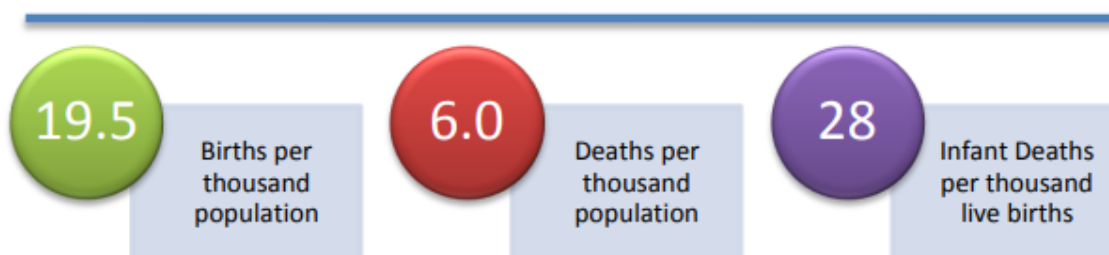
Objectives

a) The aim of this article is to highlight the purpose of vital statistics, sources, importance of vital statistics in India.

b) The need of vital statistics for enriching the quality of life & for development of country.

c) Method of collecting the Birth & death certificate.

Vital Statistics: Overview [2]

A vital statistics system is defined by the **United Nations** "as the total process of (a) collecting information by civil registration or enumeration on the frequency or occurrence of specified and defined vital events, as well as relevant characteristics of the events themselves and the person or persons concerned, and (b) compiling, processing, analyzing, evaluating, presenting, and disseminating these data in statistical form.

Vital statistics is a data/record regarding marriage, birth, diseases & death, on the basis of which community health & development are studied.

Figure 1: India at a glance, 2020

Fig. *Vital statistics in India at a glance 2020*

History of Vital Statistics in India

a) **In 1939**: The central advisory board of health recommended the compulsory registration of vital events;

b) **In 1946**: Bhore committee was constituted;

c) **In 1948**: Health ministers, appointed a vital statistics committee. **Census of India Act** passed;

d) **In 1951**: Office of the Registrar General of India was created;

e) **In 1951**: First census was conducted in Independent India (**In 1872**, First census was conducted by British Government in India)

f) **In 1960**: Vital statistics department transferred in office of the Registrar General of India;

g) **In 1961**: Sample registration system was launched;

h) **In 1969**: **Registration of Birth & Deaths Act** was passed;

i) **In 2005**: National Commission of population held on 23rd July;

j) **In 2011**: Last census in India;

Objectives of Vital Statistics

a) To provide reliable, relevant, up to date, adequate, timely reasonably complete information for health manager at all level;

b) To provide at periodic intervals, data that will show the general performance of the healthy services;

c) To evaluate the impact of various National health programmes;

d) To explain the hereditary nature of the disease;

e) To compare the health status of individual one nation to other;

f) It is the primary tool in research activities;

g) To plan & evaluate economic & social development.

Purpose of Vital Statistics

1) **Administrative purpose**: It provides clues for administrative action to create administrative standards of health services;

2) **Community Health**: To describe the level of community health to diagnose community illness & to discover solution to health problem;

3) **Health programme**: To determine success or failure of specific health programme or undertake overall evaluation of public health work;

4) **Legislation purpose**: To promote health legislation at local, state or national level;

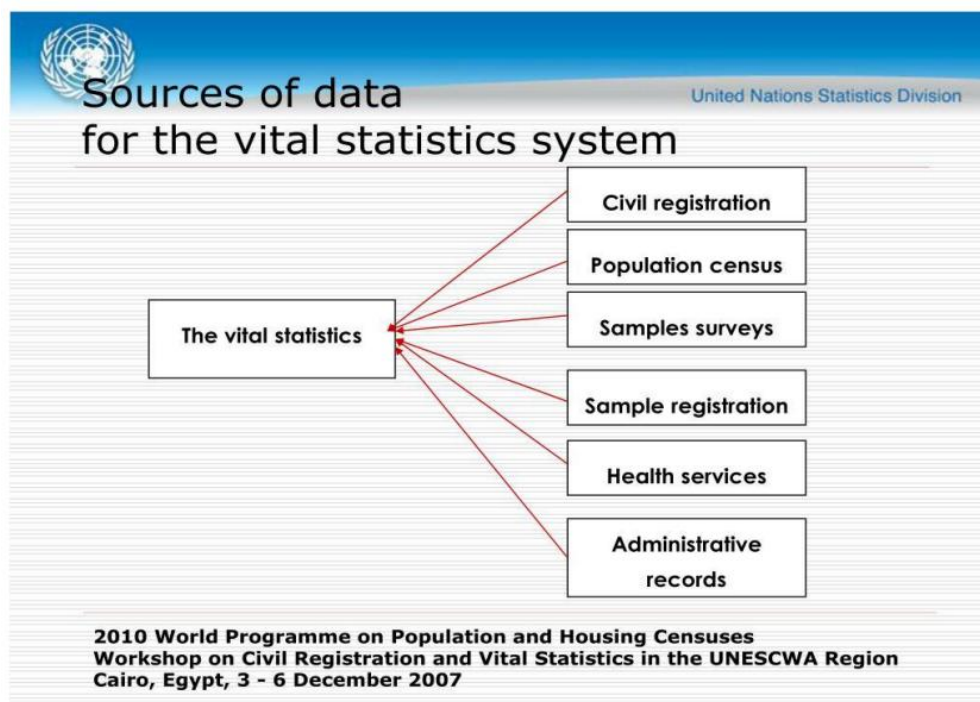5) **Government purpose**: To develop policies, procedure at state & central level.

Sources of Vital Statistics in India: [3]

a) **Population census**: First census in India was held in 1881. Indian census is one of the largest administrative exercises undertaken in the world.

b) **Civil registration system**: Civil registration system popularly known as birth & death registration system is the recording vital events that is, live birth, still birth & death. This is a compulsory system for registering vital events like births, deaths, & stillbirths under the **Registration of Births & Deaths Act, 1969**.

c) **Sample registration system (SGS):** In this system, there is continuous enumeration of births & deaths in a sample of villages/urban, blocks by a resident part time enumerator & then an independent 6 monthly retrospective survey by a full time supervisor.

d) **Demographic sample surveys such as those conducted by the National sample surveys Organization (NSSO):** NSSO, now known as National sample survey office, is an organization under the Ministry of Statistics of the Govt. Of India. It conducts regular socio-economic survey like-Household consumer expenditure, employment & unemployment, health & medical services etc. It is established in 950.

e) **Health survey**: Under the health survey mainly National Family Health Survey (NFHS) & Reproductive & child Health survey (DLHS-RCH), others are- NRHM, Annual health survey (AHS), Multiple Indicator cluster survey (MICS)

The main goal of NFHS are- *1) To provide essential data on health & family welfare needed by the MOH & FW and other agencies for policy & programme purpose 2) To provide information on* important emerging health & family welfare issues.

The main goal of DLHS-RCH: *To provide information at the district level on a number of indicators relating to child health, reproductive health problem & quality of services availability to them.*
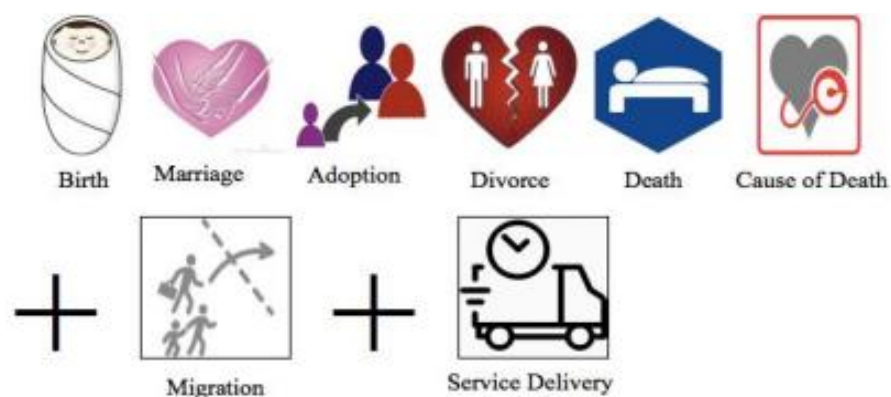

Fig: Sources to collect vital statistics

Vital Statistics [4]

Main Vital statistics in India are: a) Birth: In 2022, the crude birth rate was 19.1 per 1000 and b) Crude death rate was 6.8 per 1000.
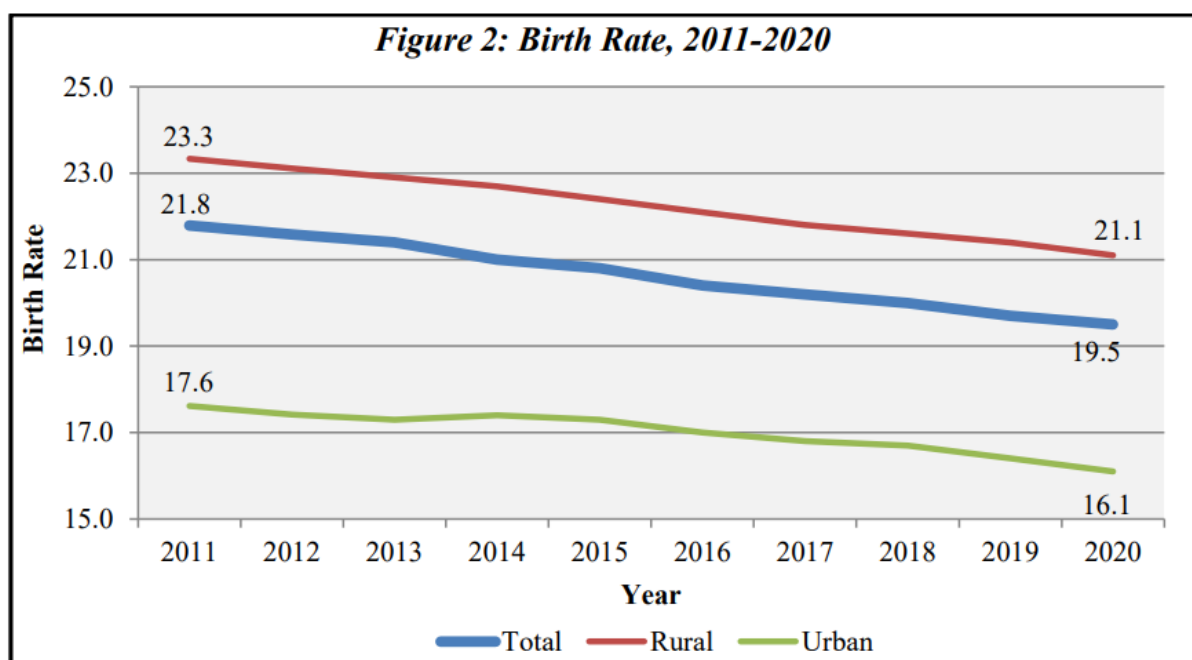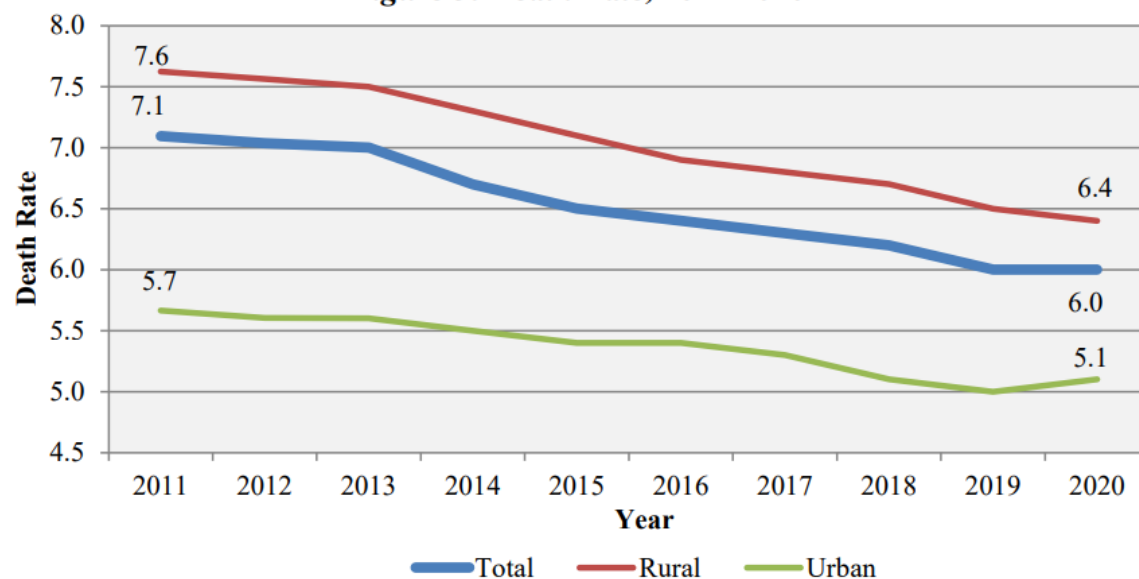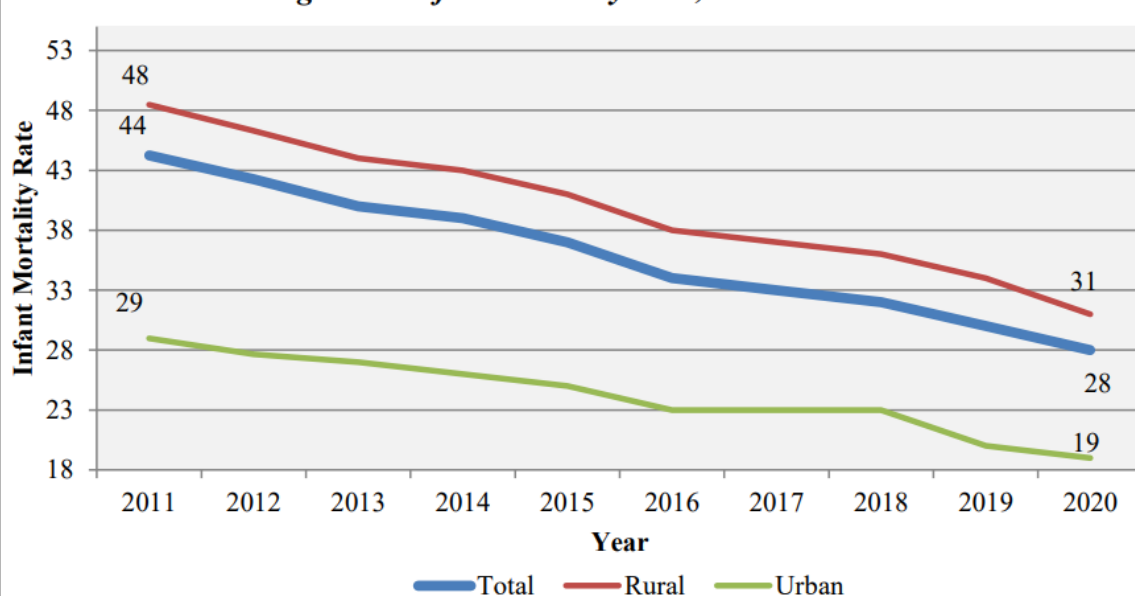
Other vital statistics are:

a) **Migration**: In 2011 census report, 45.58 crore Indians were found migrants;

b) **Fetal death**: Death of foetus prior to the complete expulsion or extraction from its Mother;

c) **Marriage**: In 2011 census, 49.9% women are married & 43.6% male are married. Age of marriage in female 18.3 to 19.3 years (2001 to 2011), where as in male it increase 22.6 to 23.3 years (2001 to 2011)

d) **Divorce: In 2011 census report**, divorced women, 68% are Hindu, 23.3% are Muslim. Total 8.5 Lakh are divorced person. Maharashtra has most divorced women & in Gujarat has most divorced man. In Goa, has lowest rate of divorced;

e) **Life expectancy: In 2019-23,** the female life expectancy is 72.5 and that of males 68.5.

Fig: *Vital statistics*

Figure 3: Death Rate, 2011-2020

Figure 4: Infant Mortality Rate, 2011-2020

Important Vital Statistics: [5]

1) **Crude Birth rate**: The ratio between the number of live births in a population during a given year and the total mid-year population for the same year, usually **multiplied by 1,000;**

2) **Crude Death rate**: The crude death rate is **the number of deaths occurring among the population of a given geographical area during a given year,** per 1,000 mid-year total population of the given geographical area during the same year;

3) **Infant mortality rate: Infant mortality** is the death of young children under the age of 1. This death toll is measured by the **infant mortality rate (IMR),** which is the probability of deaths of children under one year of age per 1000 live births;

Note: *In India 2011, IMR is 44 & in 2020 it is 28. Madhya Pradesh reported highest (43); Mizoram reported lowest (3)*

4) **Under 5 mortality rate**: **Child mortality** is the mortality of children under the age of five. The **child mortality** rate, also **under-five mortality rate**, refers to the probability of dying between birth and exactly five years of age expressed per 1,000 live births;

In India **in 2011**, the Under-Five Mortality Rate (U5MR) was *55 per 1,000 live births*, while by **2020**; it had decreased to **32 per 1,000 live births**.

Maharashtra has achieved an impressive **U5MR of 16 per 1,000 live births and that of Rajasthan it was maximum with 35 per 1,000 live births.**

5) **Maternal mortality rate**: The maternal mortality ratio (MMR) is defined as **the number of maternal deaths during a given time period per 100,000 live births during the same time period.**

Note: In India in 2011, the Maternal Mortality Ratio (MMR) was 167 per 100,000 live births, whereas in 2020, it had reduced to 97 per 100,000 live births. Assam reported highest (195), & Kerala reported lowest (19)

6) **Fertility rate:** The **total fertility rate (TFR), sometimes also called the fertility rate, absolute/potential natality, period total fertility rate (PTFR), or total period fertility rate (TPFR)** of a population is the average number of children that would be born to a woman over her lifetime if:

a) She was to experience the exact current age-specific fertility rates (ASFRs) through her lifetime;
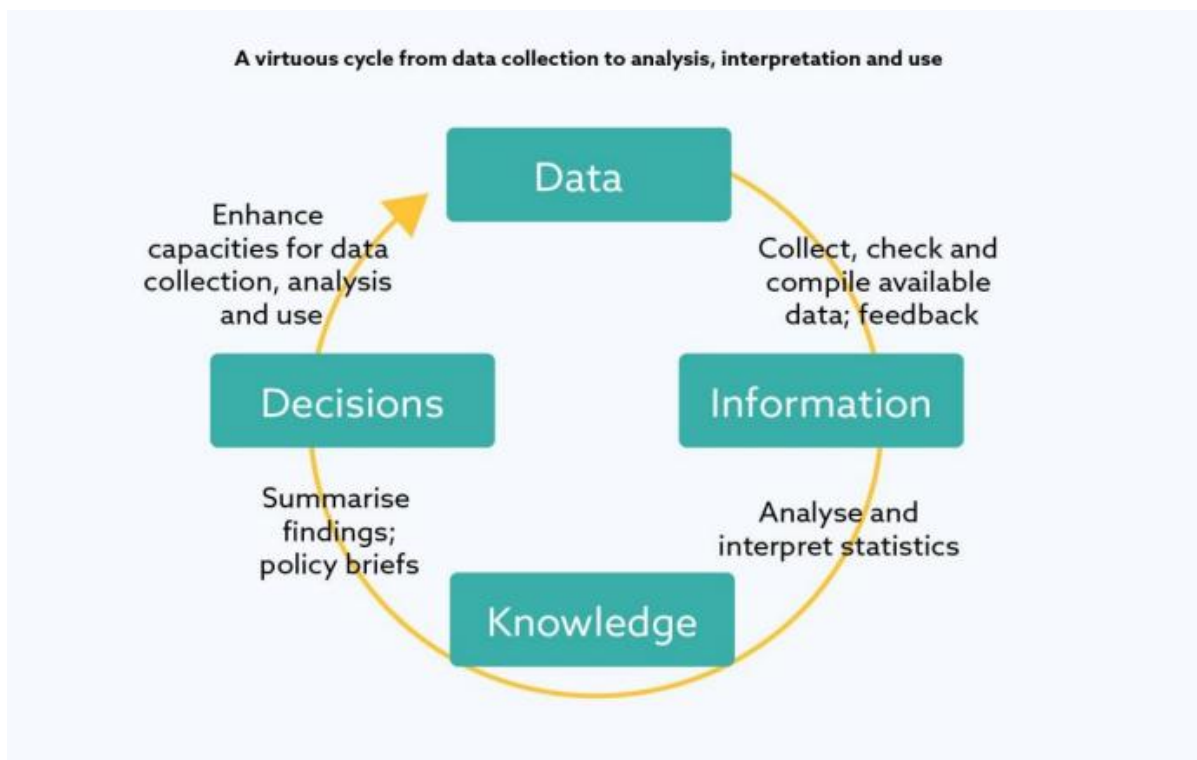
b) She was to live from birth until the end of her reproductive life Note: In India 2020, TFR is 2.0, Bihar reported highest 3, whereas Sikkim the lowest 1.4;

Demographic features of India as per the Civil Registration System (CRS)		
Years	**2021**	**2022**
Number of Registered Births	2,42,01,614	2,54,39,164
Number of Registered Deaths	1,02,24,506	86,49,930
Number of Registered Infant Deaths	1,36,648	1,42,771
Percentage of infant death to total deaths	1.3	1.7
Gross Natural Addition to Population	1,39,77,108	1,67,89,234

Fig: *Civil Registration System of India, at a glance*

Method of Collection: [6]

a) Census

b) Registration

c) Adhoc survey

Fig: Method of Data collection

Process of Birth/Death certificate Issue:

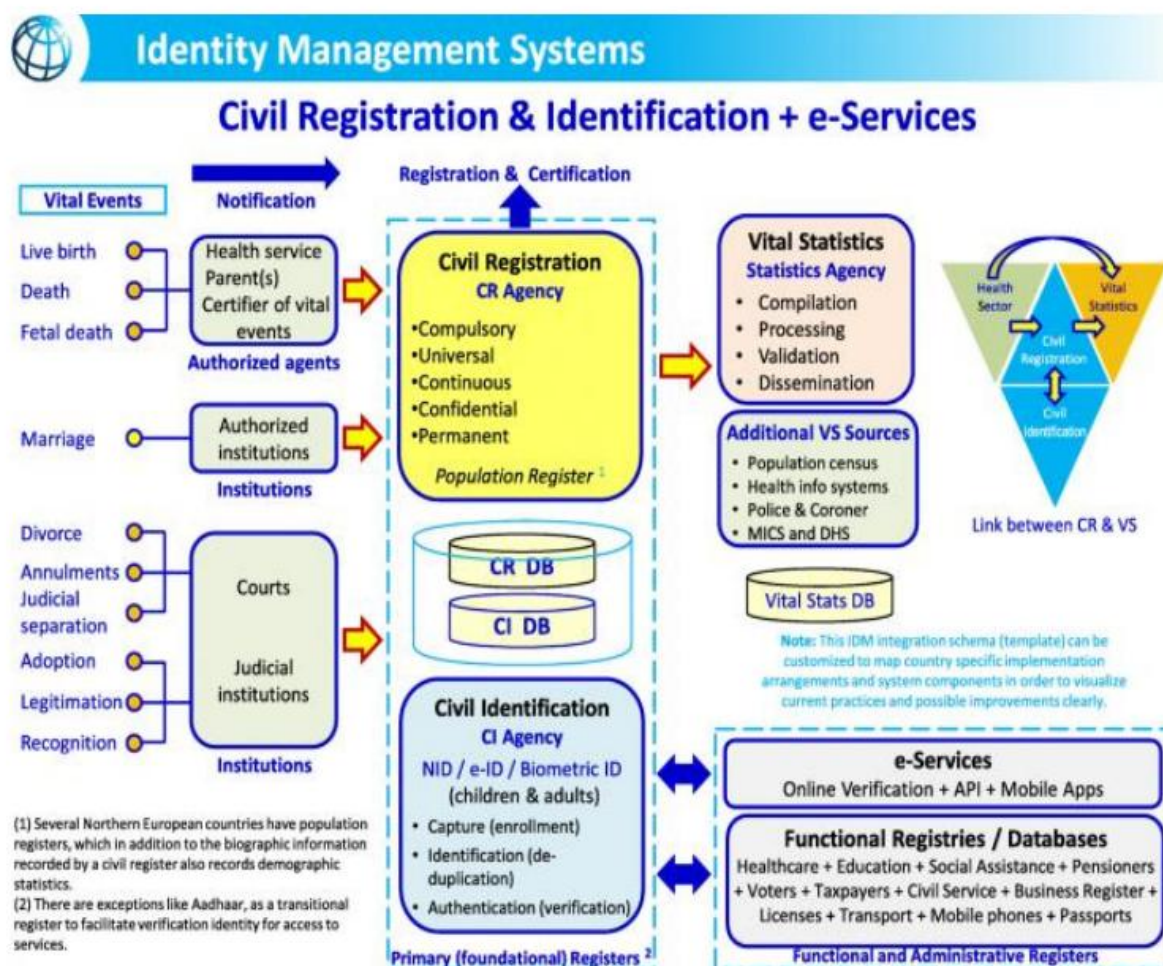*Fig: Process of Birth/Death certificate issue in India*

Why counting BIRTH & DEATH registration is important? [7]

Countries need to know how many people are born and die each year – and the main causes of their deaths – in order to have well-functioning health systems. The only way to count everyone and to track all births and deaths is through civil registration. Civil registration provides the basis for individual legal identity but also allows countries to identify their most pressing health issues.

WHO receives cause-of-death statistics regularly from about 100 Member States. However, globally, two-thirds (38 million) of 56 million annual deaths are still not registered and every year, almost half of the world's children go unregistered.

When deaths go uncounted and the causes of death are not documented, governments cannot design effective public health policies or measure their impact. Civil registration is something that all developed countries has, and that developing countries need. Information on births and deaths by age, sex and cause is the cornerstone of public health planning.

Overview of Vital Statistics Procedure

Fig: *Vital statistics registration process*

How Vital Statistics Improve the Quality of Life? [8]

Vital statistics is a vital process to improve the quality of life with development of any country. The main aim of this, to provide a better life with reduce the mortality & morbidity rate. The every citizen of the country is benefited by it. Government uses this to record data & it have huge role to make a healthy country.

a) Determination of health status of an individual or community, health problem, health needs
b) Making different health programme to improve quality of life
c) For research purpose, to determine new disease or health problem
d) To determine the communicable or noncommunicable disease
e) To know the mental health, occupational health, genetic status, financial condition of an individual [9]

Conclusion

Vital statistics the key of development of any country. Census & sample survey are the important source of it. The method of collection should be done in an appropriate way, data must be high enough quality to have utility & be used for policy purpose. Each & every individual data should be monitored & recorded. The Government should be taking more steps for quality of data collection.

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