CHAPTER I
INTRODUCTION AND REVIEW OF LITERATURE

1.1 Introduction

Study of mortality statistics is one of the important factors to access quality of life. Recording of key events of life or vital statistics is not a new concept. In England, during 1194 A.D. the investigation of deaths by coroner was started. In 1400 A.D. English Justice of peace assumed the Coroner’s fiscal duty. By 1538 A.D. Parish clergy were required to keep record of christening, marriages and burials. This form of grave registration in England marked the origin of death and burial records. The first numerical study of death records were done by John Graunt. He made detailed study on these data and published it in 1662 as “Natural and Political observations upon the Bills of Mortality”. John Graunt (1620-1674) is considered by many historians to have founded the science of demography, the statistical study of human populations (Encyclopedia of World Biography, 2004) which in turn leads to the evolution of the system of registration. Credited with constructing the first life table and giving probabilities of survival to each age John Graunt is considered as one of the first experts in epidemiology(Goodreads.com)

The oldest system of registration of vital events is found in Scandinavian countries beginning with Finland in 1628, Denmark in 1646, Norway in 1685 and Sweden in 1686. During 17th and 18th century there was improved documentation of public records and these records were used for quantitative analysis of health related problems. In the early nineteenth century, the main source of information available on the numbers of births, marriages and deaths in England and Wales was that supplied to
the census authorities by the clergy who had been required, since 1538, to keep
registers of recording of all church baptisms, marriages and burials (Frankfort, 1854).
By the mid 1830s, deficiencies in the nature of this information were becoming
apparent. Many people were simply not baptized and the burial registers gave no
indication as to causes of people’s death. This situation led to demands for the
establishment of a universal system of registration, which was set up in England and
Wales in 1837 when two Acts of Parliament (the Registration Act and the Marriage Act
of 1836) stipulated that all births, marriage and deaths to be registered. In North
American continent, the colonist from European nation introduced the grave
registration system. First registration law, 1639 was passed in Massachusetts which
transferred the responsibility of registration from the church to the government officials
and thus they started the task of recording vital events namely marriage, birth and
death. This law was further strengthened in 1644 when registration was made
obligatory and later in 1692; penalties for failure of registration of birth and death were
reinforced.

In India genesis of vital registration system is very old, more than hundred
years. The subject of statistics has been even mentioned in Mahabharata. the
Arthasastra by Kautilya (normally attributed to 321-296 B.C.) during the Mauryan
period had a detailed description of the system of data collection relating to the
agricultural, population and economic censuses in villages and towns during the period,
Chapter XXXV , Shamsastry, 1929, p.158 (Ghosh et al, 2015). Even in Mughal’s
period a detailed collection of data was in vogue (Rao,2006). Though vital registration
system in India is very old, more than hundred years old, unlike now earlier it was not
compulsory and there was no uniform law for birth and death registration. It was Birth,
Death and Marriages Registration Act, 1886 (Act 6 of 1886) extended to the whole of India except the territories (which immediately before the November, 1956 were comprised in part B, states). Act 6 of 1886 was an act to provide for the voluntary registration of births and deaths, for the establishment of General Registry Offices for keeping registers of births, deaths and marriages, and for certain other purposes. Under this act 6 of 1886, each state government had to establish a general registry office for keeping certified copies of registers of births and deaths or marriages registered under Act 3 of 1872.

The first census in the Indian subcontinent was conducted in 1881 under British Government, but despite of all no uniform system of birth and death registration in India happened till 1969 A.D., when Act called “Registration of births and deaths act, 1969” was passed. It made registration of all birth and death compulsory. Unfortunately even after 46 years of the act, still we lag behind our goal of attainment of 100% registration of all births and deaths in India. Our Government had set the target of 100% birth and death registration by 2010 A.D. (National Population Policy, 2000).

India being a signatory country to the United Nations Convention on the Rights of Child 1989, has considered the birth registration as the first right of a child(Child Line, India). We had the target to do 100% registration of both birth and death by the year 2010. But still after six years of 2010 we are far to achieve our goal. Birth registration is considered to be the first step in providing the child an identity as a registered individual in the society with legal document. Similarly registration of death is important as it gives us information regarding trends on cause of death and helps us to monitor many national programmes. A complete birth and death registration system will enable us to generate complete and reliable information on birth and death rate,
infant mortality rate, child sex ratio at district and sub district level of a state. These data are important factors for monitoring of various health programmes and for formulating and implementing of programmes on child, adult and maternal health education, nutrition etc.

1.2 An overview of registration system in India:

Registration of births and deaths in India is being done under the legal provision of the Registration of Birth and Death (RBD) Act, 1969. The Registrar General, India appointed by the central Government under the Act, coordinates and unifies the activities of the State Governments in respect of registration of births and deaths. The chief Registrar of Births and Deaths, appointed by the State Government in each state, is responsible for execution of various provisions of the act and the State Rules are made in that particular state. Actual work of Registration is being done by the local Registrars of Births and Deaths appointed under the act (Civil Registration System, India). The Chief Registrars are also responsible for compilation and preparation of an annual statistical report based on registration data for their state. The Office of the Registrar General of India, prepares national report annually based on state report.

**Salient Features of the RBD Act, 1969**

(Civil Registration System in India):

The Registration of Births and Deaths Act, 1969 provides for:

1. Compulsory registration of births and deaths at the place of their occurrence with the local Registrar under whose jurisdiction it had occurred.
2. Uniformity and comparability, leaving enough scope to the states to develop an efficient system of registration suitable to them depending upon their administrative set up.

3. Responsibility on certain persons/establishments to report the events for registration within the prescribed period of 21 days, most important being the domiciliary events to be reported by the in-charge of the institution.

4. Duties of certain persons to notify births or deaths: The Act casts responsibility on midwives or any medical attendant at birth or death, the keeper or owner of a place set apart for disposal of dead bodies has to notify every birth or death at which he or she was present to the registrar.

5. Delayed Registration of events: Births and deaths not reported within the prescribed period of 21 days but within 30 days of occurrence can be registered after payment of late fee of Rs 2. After 30 days but within one year of occurrence, an event can be registered only on written permission from the prescribed officer, on production of an affidavit and payment of late fee Rs 5. After one year of occurrence, an event can be registered only on an order of first class Magistrate and on payment of late fee of Rs 10.

6. Penalties on persons/establishments not reporting the events and the registration functionary who neglects or refuses, without reasonable cause to register.

7. Issue of Certificates: As soon as the registration is completed a certificate is to be issued on free of cost to the informant. The section 17 of the Act provides for giving certified extracts from the birth and death register on payment of
prescribed fee. Such extracts are admissible under the Indian Evidence Act as evidence of the birth or death the entry relates to.

8. Entry of the name of the child later on, but within the prescribed period if the birth was registered without name of the child. Within 12 months of registration of a birth, name of the child can be entered without any fee. After 12 months but within 15 years of registration, it can be entered after payment of a prescribed fee.

9. Correction or cancellation of entries made erroneously, fraudulently or improperly in the birth and death registers, if it is proved to the satisfaction of the Registrar that any entry of a birth or death in any register kept by him is erroneous he may subject to the rules correct the error or cancel the entry.

(Source: The Registration of Birth and Death Act of 1969, Act no. 18 of 1969)

The twenty first century witnessed enormous progress in development of health and survival status of human around the world. At theoretical perspectives demographic transition, health transition, nutritional transition and epidemiological transition overlap and it is difficult to affirm which one precedes the other (Koli et al, 2014; Karar, 2009). Moreover, all these transitions are the product of socio-economic development and modernisation (Omran, 1971, 1998). If we consider such transitions by place of residence and modernisation, it could be a function of differences in characteristics of individuals, differences in urban and rural communities or a combination of individual and community fact. Study done by Fink et al, 2013 reveals a fact that, there is an association between morbidity, mortality and urbanisation and the health outcome get affected by urban residence with remarkable changes. From a
historical perspective, the relation between urban residence and health outcomes has been mixed with rather remarkable changes in trend over time (Fink et al, 2013). Therefore, increase in vulnerability to the threat of morbidity and mortality perhaps may be due to rapid and unplanned development in the urban residential areas. Several studies have demonstrated urban advantages in morbidity and mortality across the globe.

From the vantage point of 2011, the world can look back at decades of great progress in health and survival (Fink et al, 2013). However the levels of progress in health across the countries and regions have wide disparities. Epidemiological transition like changing demographic profile, especially age profile of the population combined with urbanisation, industrialisation and the resultant lifestyle changes may have effect on burden of diseases.

The trend of increasing burden of diseases in the last couple of decades has shifted from communicable diseases to non-communicable diseases (NCDs) across the world (WHO, 2005). In countries where advanced researches are still going on for communicable diseases, NCDs are now an additional burden. In India, epidemiologists and international agencies such as World Health Organisation (WHO) have been sounding an alarm on the rapidly rising burden of cardiovascular diseases for the past 15 years (Reddy, 2009). Non-communicable diseases (NCDs), especially cardiovascular diseases, diabetes mellitus, cancer, stroke and chronic lung diseases have been emerged as the major health problems in the country (District Programme, Kamrup, Assam, 2010). Cardiovascular diseases are now the leading causes of death, strike early and kill many in their productive middle years. It was estimated that in 2005, these chronic
diseases accounted for 54,66,000 (53%) of all deaths (1,03,62,000) in India (WHO, 2005).

The systematic analysis for the “The Global Burden of Disease, 2010” reveals that Globally Cancer killed 8 million people in 2010, 38% rise since 1990. Heart disease and strokes killed 12.9 million people worldwide in 2010 – accounting for one in four deaths and Diabetes killed 1.3 million people, twice as many as in 1990 (Revision of World Population Prospects, United States, 2010). India, already a diabetes capital of the world with 32 million people with diabetes, is projected to have 69.8 million in 2025 (Reddy, 2009).

Richly endowed with natural resources, the State Assam shows an increasing rate of urban population over the last few years. The Kamrup Metropolitan is the most densely populated urban region of Assam. Guwahati is the head quarter of Kamrup Metropolitan District and the capital of Assam. The city is far the largest and fastest growing commercial, industrial, educational settlement in the North-Eastern region of India (Choudhury and Saikia, 2015). Geographically, it is located in the southern bank of the River Brahmaputra between 26º 05' to 26º 15' N Latitude and 91º 35' to 91 º 55' E Longitudes. The decadal population growth rate in Guwahati Metropolitan Area between 1981-91, 1991-2001 and 2001-2011 are 117.27, 38.6 and 26.3 respectively (Census, India). The recent decadal growth rate (2001-2011) of Guwahati city is higher than the national population growth rate of 17.64%. The municipal limit of the city is 651.12 sq. Km in 2011. The population density of the city has been 2558, 2705, 3741 and 4445 persons per sq.km in 1981, 1991, 2001 and 2011 respectively. Among all other cities in the state, Guwahati is the largest urban centre in Assam with 23.89% of the total urban population of the state and it alone contributes 55% of the combined
population of the significant towns within the state (Various issues of the Census, India). This city is now become one of the prime places for Business, Government as well as non Government offices, educational institutions, health care services in North-East of India.

With increase of number of government, semi government establishments, big to small private business establishments, household units, vehicles during the last 25 years (1986-2011) Guwahati is growing fast and thus making deficiency of housing. Rural and other migrants have been crowded together in different areas. A rapidly urbanizing city Guwahati leads a well comfortable life for a large section of the people and in contrast critical lives in slum areas are clouded by polluted and unhygienic conditions. City’s drainage system is poor in many areas. The mortality situation of the city dwellers may affect by recent polluted conditions. The drinking water facility in the city seems not up to its requirement. All these have tempted us to study the mortality situation of the urban area like Guwahati city in the last 25 years.

Urbanized life has produced a new environment; pollution of this environment in the urbanization process in Guwahati city is a vital issue. It is a common fact that the concentration of population in the economically developed and industrialized centres leads to much congestion and raise many social and economic problems. The most noticeable problem with urbanization in Guwahati is the deterioration of the environment and the appearance of slums in the city (Borah and Gogoi, 2012). Guwahati has rapidly grown in a haphazard and unplanned manner due to development of Business, setting up of government or private offices, many schools, colleges etc. Population in the city has grown up and become over-crowded, partly as a result of the increase in population by migration of persons from the countryside in search of
employment and partly increase as people arrive in search of a higher education or better living conditions. Moreover, with the rapid increase in vehicular traffic within the city, it produces huge smokes as well as other chemical objects in the air, with direct impact on health hazard.

The necessary information for vital events of people like medically certified cause of death and population counts can be generally derived from civil registration system or population registers. Now, both National Government and International Community give high priority to civil registration system. Despite the misclassification that is still expected, the new cause-of-death data will be substantially better than that available previously in India (Jha et al., 2006).

However, accurate estimation of the number of deaths in each age, gender, localities, cause of death is a crucial starting point for analysis of the mortality situation in any region. From literature we find that, about 46 million of the estimated 60 million deaths per year worldwide occur in developing countries (WHO, 2002). According to the 2010 Revision of World Population Prospects, life expectancy at birth for the world as a whole rose from 46.6 years in 1950-1955 to 69.3 years in 2010-2015.

This study aims to find out the information regarding trends of death rate, life table, life expectancy, dynamic extension of life table and life expectancy from dynamic life table, major causes of death and change in the ranking of different diseases over a period of 25 years(1986-2011) in Guwahati city from the registered death records of the Guwahati Municipal Corporation. In India, over 75% of the annual estimated deaths 9.5 million deaths, occur in the home, and the large majority of these do not have a certified cause (Jha et al., 2006). However, India is facing both double burdens of diseases that burdens of communicable and non communicable (Koli et al,
We want to see certified cause mentioned over registered deaths of urban areas of Assam. Lack of accurate data on cause of death is a major hindrance to comprehensive assessment of epidemiological transition (Koli et al, 2014). As we want to see the trend of mortality pattern in Guwahati since 1986 to 2011 from large Registration data, we limit our analysis to specific year considering interval of five years that is 1986, 1991, 1996, 2001, 2006 and 2011.

A systematic description of the objectives adopted in the present study is given below:

1.3 Objectives:


3. To study the trend and differences of cause specific mortality ratio by sex from 1986 to 2011 and to construct cause specific life table and estimate of gains in life expectancy after partial elimination of the major causes of death.

4. To construct dynamic life table for the year 2011 incorporating change of probability of death during last 10 years and 25 years (from 1986), Guwahati city for both male and female.

5. To study the survival functions of patients admitted in cardiology and nephrology department, Gauhati Medical College and Hospital in 2011.
1.4 Data

Data for this study has been extracted from the Birth and Death Registration, Office of the Guwahati Municipal Corporation (GMC) for the years 1986, 1991, 1996, 2001, 2006 and 2011. From large registered data on death in Guwahati since 1986 to 2011, we limit our analysis to specific year considering every 5 year interval starting from 1986 to 2011. We believe that selection of the years at 5 year intervals will give us possible information about trend and differentials prevailing in death statistics over 25 years.

In this city, deaths are usually registered with specified cause of death certified by medical practitioner. Deaths occur at health institutions are certified by physician as many of them are preceded by an illness and attended by medical practitioner and deaths that occur at home or at any other place are reported by their relative to authority. Further when a person dies his or her body is brought to the cremation ground and the person employed by Guwahati Municipal Corporation (GMC) register the name, age, sex, address, cause of death and sent that to the higher concerned authority (Choudhury and Rajbonshi, 2006). Even when a particular case, cause of death is not known, the medical registrar are able to give the best information on the cause leading to the death after probing from the Post mortem reports.

There are total 16(sixteen) Birth and Death Registration units under Office of Guwahati Municipal Corporation (GMC) in Guwahati Metropolitan.

1. Gauhati Medical College and Hospital, Bhangagarh.
2. Mahendra Mohan Choudhury Hospital, Panbazar.
3. Directorate of Health Services, Hengrabari.
4. Joint Director of Health Services, Silpukhuri.
5. Notbama Mini Public Health Centre, Hatigaon
6. Dhirenpara Maternity Child Welfare Hospital, Dhirenpara.
7. First Referal Unit, Pandu, Maligaon.
8. Government Ayurvedic College and Hospital, Jalukbari.
15. Sonapur Block Public Health Centre, Sonapur.

There were total of 24,145 deaths in Guwahati Metropolitan city under consideration of every five year interval since 1986 to 2011. The population age and sex structure of Guwahati city is derived from census of India (1991, 2001 and 2011) and the next consecutive years’ population are estimated by taking the census population figures.

A large number of data had been collected from Gauhati Medical College & Hospital from for the year 2011. Medical Record Department (MRD) of Gauhati Medical College & Hospital (GMCH) provided the overall information of all patients. When patients with any kind of illness come to Gauhati Medical College & Hospital, their names are required to be registered in the counter meant for Out Patient Department (OPD), with the information about their name, sex, age, residential address, phone number, type of illness etc. After attending the OPD, the patients are
referred to the corresponding department if necessary. Any illness with specific health complicacy has to go through in depth clinical examination for diagnosis of the diseases and subsequently, advised for examination of blood, stool, urine, sputum etc. Records of all such information are digitally maintained at Medical Record Department (MRD) with the proper use computer. Records of all information related to specific type of diseases, their type of treatments, their health status, deaths or births etc are available under MRD, it serves as one of the units under Office of the Birth and Death Registration, Guwahati Municipality Corporation.

The following are the statistics of GMCH in the year 2011 under different heads.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>GMCH</th>
<th>Year 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Total Out Patient Department (OPD) cases</td>
<td>5,74,087</td>
</tr>
<tr>
<td>2.</td>
<td>Total admitted cases</td>
<td>74,192</td>
</tr>
<tr>
<td>3.</td>
<td>Total bed Strength</td>
<td>2,185</td>
</tr>
<tr>
<td>3.</td>
<td>Emergency Cases</td>
<td>82,832</td>
</tr>
<tr>
<td>4.</td>
<td>Number of Child Birth</td>
<td>13,538</td>
</tr>
<tr>
<td>5.</td>
<td>Number of total death</td>
<td>2,189</td>
</tr>
<tr>
<td>6.</td>
<td>Total major Surgery</td>
<td>11,609</td>
</tr>
<tr>
<td>7.</td>
<td>Heart Valve (Free)</td>
<td>30</td>
</tr>
<tr>
<td>8.</td>
<td>Permanent Pacemaker</td>
<td>345</td>
</tr>
<tr>
<td>9.</td>
<td>Total positive cases of TB out of 1351 suspected cases</td>
<td>550</td>
</tr>
</tbody>
</table>

**Source:** GMCH Medical Audit, 2013
1.5 CHAPTER OF THE THESIS:

Chapter wise description of the thesis is given below.

**Chapter I,** Introduction and review of the related literature.

**Chapter II** attempts to see the mortality situation in Guwahati city, since 1986-2011. The mortality data we considered were from registered death cases of Guwahati city in every 5 year interval starting from 1986 to 2011. Here we had consider total population percentage of Guwahati city from census of India for 1991, 2001, 2011 and for the year 1986,1996 and 2006 we calculated the total population from 1991,2001 and 2011.

**Chapter III** is about a comparative study of the life tables of Guwahati, since 1986-2011. Here we adopted Greville’s method for construction of life table. Life expectancies, the most important findings of a life table have been compared with the life expectancies calculated by SRS based Abridged life table 1986 to 2011. Along with the expectancies of life, probabilities of deaths were analysed and compared between the age groups and study years.

**Chapter IV** a study on cause specific death ratios and cause specific life tables for Guwahati, since 1986-2011. Deaths are usually registered under Guwahati Municipality Corporation with underlying cause of death. We selectively had taken cause of death into some broad categories. Cause specific life tables have been constructed. Age and cause decomposition of differences in life expectancies at birth for both male and female have been studied. We adopted cause elimination for some selected cause of death and studied its effect on life expectancies.
Chapter V is about study of dynamic life table of Guwahati city for the year 2011 over previous 10 years and 25 years for both male and female. Forecasting death probabilities and life expectancies are our goal. We had taken two period life tables of 1986 and 2001 for male and female and dynamic life tables were constructed.

Chapter VI devoted for the study to see the trend and pattern of diseases of patients attending Gauhati Medical College and Hospital in 2011. Survival analysis was performed for patients admitted in Gauhati Medical College and Hospital, in the year 2011. Since cardiovascular diseases have been identified as major cause of death in Guwahati city in the last quarter century since 1986 to 2011, we consider in-patients data from two specific departments of Gauhati Medical College & Hospital for Survival analysis, cardiology and nephrology.

Chapter VII gives the overview of the study and scope for further studies for discussion.

At the end of the study, references are presented followed by Annexures.

1.6 REVIEW OF RELATED LITERATURE

Accurate and timely data for mortality by age, sex and cause of death both nationally and sub-nationally are essential for the design, implementation, monitoring and assessment of health programmes and policies. Various research studies have been conducted in India and other countries of the globe on different aspects of mortality. With reference to the objectives of the present study, relevant literature as per availability to the researcher have been reviewed and reported.

In countries with well developed statistical systems, the necessary information for such descriptive epidemiology is derive from civil registration, medically certified
cause of death, population counts from regular censuses or population registers. Both national governments and international communities have given high priority to policies that will upgrade civil registration system so that all countries will enjoy the benefit of a solid empirical base for health sector planning. However, experience has shown that such improvements need investment not only in administrative systems but also in public awareness.

The study by Ndong I, et al.,(1994) was designed to evaluate the accuracy of vital registers as sources of data for infant mortality rates in Cameroon. It says there were only 4% registered cases for infant deaths. According to McCaw Binns AM et al., (1996) registration of infant deaths in Jamaica reported 13% of still births and 25% of infant deaths.

Annual summary of vital statistics by Guyer B et al, (1995) found that in United States of America, the preliminary infant mortality rate was 7.5 per thousand live births and it was the lowest ever recorded. The decline occurred for neonatal as well as for post neonatal mortality rates.


T.M. Akande and O.O Sekoni, (2005) in their study conducted in Nigeria showed that though awareness of birth registration was high in the study population, the awareness of death registration was however very low. Of the 209 households that
recorded deaths in the last 10 years, only 14 (11.8%) households reported registered deaths.

In the Setting Priorities using Information on Cost-Effectiveness analysis project (SPICE, 2005-06) conducted at Thailand for improving vital statistics and cause of death data they found, incompleteness of death registration to be 5% and ill defined cause of registered deaths from Verbal autopsy.

European region had highest number of countries (39 out of 52 countries) who reported complete cause of death data. Whereas African region had the lowest, it has only one country reporting the complete cause of death data (WHO, 2010).

Ruzicka and Lopez (1990) have listed five criteria used by the World Health Organization to assess fitness of country level cause of death data for inclusion in its complications. These are basically plausibility checks. All cause and cause specific mortality rates for the population could be obtained by high quality national vital registration systems with death registration completeness of at least 70%.

The study by Mather CD and et al.,(2009), that examined data on deaths for 136 disease and injury; causes were estimated from available death registration data (111 countries), sample death registration data (India and China) and for the remaining countries from census and survey information. They found that, Ischaemic heart disease and cerebrovascular diseases are the leading causes of death, followed by lower respiratory infections, chronic obstructive pulmonary disease and diarrhoeal diseases. HIV AIDS and TB are the sixth and seventh most common causes of death. It says globally around 6 in 10 deaths are from non communicable diseases, 3 form communicable diseases, and 1 from injuries. Injury mortality is highest in South–East
Asia, Latin America and Eastern Mediterranean region. Philip W. Setel and et al., (2005) had mentioned in their publication that registration or recording of death by age, sex and cause and calculating mortality levels were basic needs for evidence based health policy, monitoring and evaluation. But only few countries have complete death recording with correct cause of death data.

A study, “The Completeness of Death Registration in Thailand”, Promote Prasartkul and Patama Vapattanawong (2006) assessed the quality of mortality data from the Registration system of Thailand. The study took the advantage of Kanchanaburi Project by comparing the deaths found in annual censuses to those recorded in Civil Registration system in order to measure the level of under registration. They pointed out the gap between the multiple steps of death registration.

Hill K (2007) found that, the total number of countries whose death registration regarded as complete increased by only seven countries for 1970 to 1990s. Joachim Cohen and et al.,(2007) studied the death records of nine European countries of which data of five countries were found to be fulfilling all criteria for finding the place of death and at the end they concluded that death certificate provided information on place of death and possibly associated factors.

India had seen an uprising trend in the level of death registration since last 25 years. It varies from state to state. Seal KC, Talwar PP (1998) in their study suggested some steps for improving the vital registration system which include the enforcement of compulsory vital recording, simplified registration rules and procedures, involvement of notifies, reconciliation between SRS vital statistics and provision of minimum essential staff.
Medical Certification of Causes of Death was introduced in India by providing statutory framework. Under section 10 of the Registration of Births and Death Acts, 1969 all the States/Union Territories of India, the scheme has been working at different levels of efficiency across the areas in terms of coverage, reporting and quality of data. The key findings of the report on causes of death by Office of the Registrar General, India 2001-2003 reveals that non-communicable diseases are the leading causes of death in the country for 42% of all deaths. Communicable diseases, maternal, prenatal and nutritional constitute for another 38% of the deaths. Injuries and ill defined causes account for 10% of death each. In the EAG states and Assam, there is a significantly higher proportion of all deaths due to communicable diseases (50%) vis-a-vis the other states 28%. In case of non-communicable diseases, the EAG states and Assam (33%) and other states 50%. Across all ages cardiovascular diseases are the leading cause of death (19%) followed by respiratory diseases (9%), diarrhoeal diseases (8%), TB (6%) and maternal condition 1.8% of the total female deaths in the country. The current Infant Mortality Rate (IMR) of India, as per the Sample Registration System (SRS) 2013, is 40 per 1,000 live births while the Under-5 Mortality Rate (U5MR) as per (SRS) 2012 is 52 per 1,000 live births. In Assam IMR, as per (SRS) 2010 is 58 per 1000 live births, of which 60 per 1000 from rural and 36 per 1000 from urban.