1 Introduction

1.1 Historical Background/Periodical Development

Public Health: Public Health deals with the health of the public in general, it includes improving health and quality of life by preventing and treating diseases along with other physical and mental health problems by inspecting cases and promoting health behaviours. It engages activities such as examination of health of general public, identifying their health needs, development of health policies for promoting health and evaluation of health services Health Promotion and Health protection are two important components of public Health. Health promotion covers action taken by government to encourage public to adopt behaviours that will bring about better health. Many of the health promotion activities undertaken by government are anti-smoking campaigns, encouragement of healthy lifestyle and prop up better nutrition. On the other hand, Health Protection activities include the steps taken by government to prevent the growth and spread of diseases and illness the activities that fall under health protection include overall health examination and introduction of regulations to prevent the contact of public with health danger. The Indian government has taken several measures in its policies related to expansion of medical services and infrastructure. However, the public health system is not sufficient to provide health care to all due to scarcity of resources and insufficient infrastructure.

Components of Public Health:
Public health can be well understood through its components, the major components of public health are:
• Control of environmental health risks such as pollutive agents, carcinogenic agents.
• Appraisal and regulation of health risks associated with emergent technology, biotechnology.
• Providing food security and nutrition
• Regulation of hazardous products
• Control and regulation of infectious disease
• Access to health services and medicines.

**National Rural health Mission**

The United Progress Alliance (UPA) government of India took health care as one of the seven main focus areas as a part of the directives of National Common Minimum Program (NCMP). Increasing the expenditure up to 3% of Gross Domestic Product (GDP) from the existing 0.9% of the GDP in health sector over the next five years was proposed in this directive. With a focus on primary health care, the concept of National Rural Health Mission was put in place and in April 2005 it was operationalized in all states of India. A special focus was given to 18 states among which 08 states are sanctioned as special action group states.

The National Rural Health Mission aims at providing dependable, inexpensive, effectual health care at primary level, particularly to the poor and susceptible people of the society. Another important aim of the mission is to bridge the gap in health care particularly at the rural areas by creating a team of Accredited Social Health Activists (ASHA), through monitoring and assessing the improvements and performance of care given at hospitals in accordance with the Indian Public Health Standards, taking the same concept up to district level by applying the method of decentralisation for bringing together the inter and intra health sector so as to effectively utilize the resources.

The NRHM programme also takes into account the fragmentary programmes which are often implemented by the Ministry Of Health and Family Welfare (MoHFW). These
health programs are the RCH II programme and other health care programmes for eradication of deadly diseases like Malaria, Tuberculosis, deficiency of Iodine and Iron, Filarial, Leprosy and integrated Disease Surveillance. Nutrition, maintenance of hygiene and good sanitation facilities and safe drinking water are other issues that are taken care of under NRHM. The objectives and goals of the mission are applicable to other forms of health sectors i.e. Ayurvedic, Unani, Siddhi and Homeopathy (AYUSH), Development of Women and Child, better sanitation facilities, rural management through Panchayat Raj, Rural Development and Elementary Education.

Yet another goal of the mission is to give power to the government at rural level so that they can have a bigger hold over the local society. This can be achieved by engaging government institution like the Panchayat Raj, Non-profit organisations and the Non-Government Organisations at different levels including the National, State, District and Sub-district Level.

**Reproductive Child Health (RCH) – Phase-II**

The Family planning program was launched in India for the first time in 1952. India was the first country to introduce this. Under this program at the initial stages, only the health facility related studies and neighbourhood information, education and communication (IEC) activities for encouragement of adoption of methods of contraception were included. The infrastructure related details were provided at a later stages during the third five year plan, in addition to the regular programmes, other programmes such as Control of Diarrhoea, Post Partum, Community Health Guide, Multi Purpose Worker scheme and similar programmes were introduced.

In order to improve the RCH program further and make it more effective to the general public, multiple amendments were made. This program was also scaled up so that it could be applied across the entire nation. Two major sub – programs were included as a part of the modification and expansion of this program. First, the “Universal Immunisation Program” was introduced in 1985 which aimed at providing systemized health services to
remote areas. The second program under RCH was introduced seven years later in 1992. This was the “Child Survival and Safe Motherhood Program” which aimed at improving the Maternal and Child health through effective intercession and better Immunisation services. Singular emphasis was given to Maternal Health particularly at the reproductive stage during the International Conference for Population and Development held in 1994. This conference considered the complete and interconnected life cycle services. This formed the ground base for restructuring of the RCH program.

RCH provides need based, client centred, high quality, demand driven services to the beneficiaries. This program is a combination of the inputs given by the government of India and financial assistance given the World Bank and European Commission. RCH-II was introduced to all states from April 2005 onwards.

The Components of RCH Programme
The main objectives of the Gujarat state under the RCH programme which the state needs to achieve by the year 2010. The objectives are as follows:

- Bringing down the MMR from 389 to 100 per 100,000 live births in the state.
- Reducing in the total fertility rate from 3.0 to 2.1 in the state.
- Bringing down the IMR from 46 to 30 per 1,000 live births in the state.

1.2 Health Care Infrastructure
The Health care infrastructure comprises of supportive systems which are harmonized together along with evenly placed health care staff comprising of clinical, paramedical and management staff at all levels. Apart from this, the health care infrastructure also includes health information systems like the IT network, the databases, communication system etc. Patient Safety along with delivery of effective health care services is the center point of any health care model. A good health care infrastructure forms the foundation and supports in achieving the goals of the health care centers and helps in delivering the services to the right place at the right time. The Health care Infrastructure in India is a well balanced system developed to fulfil the goals of the system.
The health care system in India at rural level can be broadly classified at three levels, the very basic care is provided at primary level followed by a secondary level and tertiary level of health care facilities. The Sub Centre, Primary Health Centre and Community Health centre form a part of the primary level; these centres cater to the rural populations of India. These centres are established by state government though the funds provided to them by the central government.

**Sub Centres (SC):** This is smallest of the three centers; it is the primary contact point of the rural community and the health workers.

**Primary Health Centres (PHC):** PHC is the next higher level to a Sub- centre, and is a contact centre of the rural community and doctor. The activities of PHC involve healing,
anticipatory and promoting family welfare services. It is a referral unit for about 6 Sub Centres. A PHC centre usually comprises of 4 to 6 beds.

**Community Health Centre (CHC):** This is the larger centre of all three and serves as referral point for at least four PHCs. A CHC centre should have at least 30 beds for patients, apart from all the facilities available at PHC, CHC centres also need to have operation theatre, laboratory and X-ray facility, labor room.

### 1.3 First Referral units (FRU)

Every 14 minutes a woman dies in India from pregnancy and complications of child birth. Maternal Mortality occurs mainly due to haemorrhage, the other major causes include unsafe abortions, convulsions, infection and transverse labour. Many of such deaths can be avoided if timely and quality care is provided during pre, post and at the time of child birth along with safe deliveries within a health institute, timely referral and provision for emergency obstetric care.

Primary health centers are capable of providing Basic Emergency Obstetrics care without the need for an operating theater. In order to deal with complicated issues in pregnancy provision for caesarean section and Blood transfusion is essential is termed as Comprehensive emergency obstetrics care and can be provided at centers higher than the primary health centers such as the CHCs, SDH, DH and other high level.

**TABLE 1.1 COMPARISON OF BASIC EmOC AND CEmOC FUNCTIONS**

<table>
<thead>
<tr>
<th>Basic EmOC Functions</th>
<th>Comprehensive EmOC Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not require an Operation centre and can be performed at Primary Health Centres</td>
<td>Usually performed at centres higher than the PHCs and can be provided in an operation theatre only.</td>
</tr>
<tr>
<td>• Providing Antibiotics in Intravenous/Intramuscular form</td>
<td>Comprehensive EmOC services includes all facilities available at basic level and in addition , has the following two important</td>
</tr>
<tr>
<td>• Providing oxytoxics in the Intravenous/Intramuscular form</td>
<td></td>
</tr>
</tbody>
</table>

~ 6 ~
| Intravenous/Intramuscular antiepileptic medicines |  |
| Manually removing Placenta |  |
| Supportive Vaginal Delivery |  |
| Removing leftover placenta products |  |
| Caesarean delivery | Availability of Blood Supply for operations. |

Major three delays that cause maternal deaths are:

- Decision delay- This delay occurs when the patient or her relatives and indecisive about whether or when to take assistance from the health centre.

- Travel delay- when patient does not get appropriate and timely transport facility to reach the nearby health centre

- Receiving delay- Health centres cause delay in providing appropriate care to the patients.

Hence to cater to the need of preventing maternal deaths and providing comprehensive emergency care, the Ministry of health and family welfare recommended setting up fully functional health centres under NRHM. These centres would have the local community ownership, following a distributed management system and connected though a network of health centres at all the three levels. On these lines, the First Referral Units (FRU) concept was adopted.

A FRU is a district or sub-divisional hospital or community health center which has the facilities for obstetric surgery, blood transfusion, anesthesia, specialist pediatric care, operation theatre and required equipment. This center also has the facilities for MTP, tubectomy, vasectomy and pediatric care for high risk neonates and other severe problems of early childhood. It provides specialist services in addition to all the services available at a Public Health Center.
First Referral units were set up mainly to bring down the maternal mortality rate to 100 per one lakh live births and bring up the percentage of health center deliveries to around 80%. The state FRU cell takes care of the monitoring and supervision of the FRU centers at all levels of health care. FRUs provide both comprehensive emergency care and newborn care to cases which are referred from primary health centers.

FIGURE 1.2 REFERRAL NETWORK IN HEALTH SYSTEMS

1.4 IPHS Standard

Providing health care is just not enough for improving the public health, an improvement in the quality of health facility is essential. The Indian Public Health Standards provide the aspects for bringing about overall quality improvements in the services provided by health. The IPHS standards are to be implemented under NRHM across all levels of health facilities. Despite having expanded largely, the health care system in India does not have uniform quality of services. This non-uniformity is mainly due to non-availability of manpower, issues in ease of access, suitability, non-participation of local community and similar reasons. Thus IPHS standards bring about
improvements in Quality of services delivered at health centers and provide uniformity of service delivery.

The recommendations of IPHS standards are to provide the availability of gynecologists and anesthetists specialists at health centers. It also recommends having a public health manager posted at these centers. Apart from the specialist staff, the supportive staff is also necessary as per the IPHS Standards. The Auxiliary Nurses and Midwifery and a public health nurse are recommended to be posted at these health centers.

At present IPHS standards are applicable to CHCs only as these centers are also the First Referral Units, however the government of India has come up with IPHS standards for Sub centers and primary Health centers to strengthen these centers too. FRUs are given more emphasis as they are the connecting point of the primary health center and Tertiary health center.

The IPHS standards for CHC of FRU level specify the following Norms: A facility of this type should provide the following assured services:

- Regular and emergency treatment for surgery
- Regular and emergency medical treatment
- Round the clock 24X7 facility for Normal and supported delivery.
- Crucial cesarean delivery, Normal delivery and other medical emergency.
- Family Planning services of all types
- Safe medical termination of pregnancy
- Routine Care for new borns
- Regular and emergency treatment of sick children
- Neighbourhood Health Plan should be delivered through CHC
• National level health programmes such as RNTCP, NLEP, HIV/AIDS control, Vector Borne disease Control, control of blindness, referral services. In addition to blood transfusion facility, laboratory services

Specialist Services available at FRU:

Surgical:
• Caesarian section
• Laparotomy and repair of ruptured uterus
• Surgical treatment of severe sepsis
• Evaluation of incomplete abortion
• Mid-trimester abortion
• Repair of cervical and vaginal tears
• Amniotomy with/ without oxytocin
• Tubectomy/vasectomy

Medical Management of:
• Severe hypertensive disorders of pregnancy, eclampsia
• Hemorrhagic shock
• Severe anaemia
• Septicemia
• Use of iv oxytocin during labor

Manual:
• Manual removal of placenta
• Forceps delivery
• Vacuum extraction

• Partography

Anesthesia:
• General, spinal

Blood Transfusion:
• Bleeding a donor and blood transfusion

• Performing mandatory tests

• Newborn and Pediatric Care:

• Resuscitation

• Management of sick newborns and severe illnesses of young children

1.5 Critical Determinants of FRUs

The Critical requirements to make a FRU fully functional are, Emergency Obstetric Care (EmOC) services including surgical services such as Caesarean Section and other medical services, provision for blood transfusion facility along with the option of having Blood storage facility, facility for treatment and care of new borns and round the clock services for normal and assisted delivery. There are certain specific issues in operationalisation of FRUs, which include lack of appropriate infrastructure and essential amenities, on the logistics side; shortage or lack of emergency drugs, lack of blood transfusion facilities, lack of skilled manpower particularly anesthetists and gynecologist.

This study purposes to study the First Referral units in Gujarat state, as Gujarat has shown major improvements in terms of the operationalisation of FRUs, bringing down the MMR and IMR in comparison to other neighbouring states like, Rajasthan and Maharashtra.

Operationalization of FRU:
An FRU is said to be operationalized only if it is set to provide 24 hour services for emergency obstetric and new born care, in addition to all the other general emergencies which every hospital provides. A health facility is selected to be a FRU based on certain criteria which include the i). Location of the health facility to be at Sub- divisional, Taluk or block headquarters level, ii).having general accessibility either through rail or all weather road links, iii). If it is located at more than 4 hours travel distance from district headquarters, iv). If the average bed occupancy rate in last 12 months was more than 60% of the operational bed-strength, if no private or charitable or trust hospital is functioning at that location.

1.6 Essential Requirements for FRUs

A health center needs to have certain essential requirements to be a fully functional FRU center. A detailed list of the critical requirements at FRU of CHC, Sub- District and District Hospital level is as follows:

Human Resource Requirements:
- MBBS Doctors male and female
- Surgeons
- OBG specialist
- Anesthetists
- Pediatricians
- Lab technician
- Staff Nurses

Infrastructural Requirements include:
- Operation Theater
- Labor Rooms
- Facility based New born care.
- 24-hour Water Supply

Logistics requirements include:
• Emergency Drugs
• Blood Supply and Storage Facility

Specialist staff:

The Specialists staff required at FRUs comprises of the EmOC team which includes a gynecologists, an anesthetist and a pediatrician. Since there is a shortage of around 6000 specialists to operationalize over 2000 FRUs in the country, there is a huge shortage of Specialists staff at FRUs. Many initiatives have been taken by states for recruitment and retention of health workers to overcome the shortage such as educational and regulatory measures, monetary compensation, workforce management policies, public private partnership, multi-skilling and alternative service providers. One of the major initiatives taken by Government of India was to provide Comprehensive Emergency Obstertric care training to doctors who are working as medical officers and also training on life saving anesthetic skills to other medical officers posted at these centers. These two training programs were provided in the entire nation. Both of these trainings were conducted by Government of India in connection with Federation of Obstetric and Gynecological Societies of India (FOGSI). The Jhpiego organization provided all the technical aid needed for the trainings.

General medical officer trained on emergency Obstetrics care is called as a Comprehensive emergency obstetrics care specialists or CEmOC specialist. and a general medical officer trained on anesthetic skills is called Life saving anesthetic skilled specialist or LSA specialist. FOGSI and Jhpiego also provide a 16 week Emergency Obstetrics and New born care (EmONC) training to medical officers to overcome the shortage of new born care specialists at FRU centers.

Blood Transfusion Facility:

Considering the Population of the country, the government developed a 3-tier system for managing Blood banks in India comprising of National Blood Transfusion Council (NBTC), State Blood Transfusion Council (SBTC) and State-wise Blood Programme. In
compliance with the Supreme Court Judgment given in January 1996, the court directed the Government to set the house in order, based on these directives, National & State Blood Transfusion Councils have been constituted as autonomous bodies for planning and management of blood transfusion service.

Annual blood requirement in India is 10 million units whereas the annual blood collection is approximately 6 million units which show there is a 40% shortage in blood supply in India every year.

Blood banks in India are controlled and maintained by various organizations, the government of India has the largest share of the total banks, followed by Indian Red Cross Society, a smaller portion of these banks are managed by the non-government organizations and private hospitals separately.

The blood transfusion system in India is sub-divided into smaller segments; approximately 2600 blood banks are there totally in India. At the national level, the blood transfusion system is coordinated by Government of India through the National Aids Control Organization (NACO). As per the official website of NACO, 36.04% of the blood banks are managed centrally, a smaller portion of 14.4% blood banks are managed voluntarily, 28.8% of the blood banks are managed by the private hospitals and 20.7% are managed by private charitable trust. There is a lot of improvement required in the blood transfusion system at the Rural and suburban areas as majority of them are concentrated in the larger cities of the country. Although the population of the urban area is much greater compared to the rural areas and on the population basis it is justified to have larger number of Blood transfusion units, it is also fact that accessibility and availability of blood much better in urban areas in comparison to rural areas. Hence strengthening of Blood transfusion system in these areas is critical.

The Blood supply and transfusion system in urban areas is well developed and the same systems need to be upgraded at the rural society to make it on par with its counterpart.
TABLE 1.2 BLOOD BANK STATUS IN INDIA

<table>
<thead>
<tr>
<th>Category wise distribution of blood banks in India</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Banks Managed by Government</td>
<td>Non government Blood banks</td>
</tr>
<tr>
<td>940</td>
<td>376</td>
</tr>
</tbody>
</table>

Another important facility required at FRUs is the availability of Blood supply for emergency operations. Particularly in cases of emergency obstetric care, a well organized blood transfusion services is a vital component of health care delivery system particularly for Comprehensive emergency care provided at First Referral units. One of the major regions for non-operationalized center is the lack of Blood storage/ transfusion facilities at these centers. The lack of Blood transfusion services at FRU results in delay or non-treatment of complications associated with pregnancy, which leads to maternal deaths.

A study of the maternal deaths caused in India shows that a majority of these deaths are due to severe bleeding/hemorrhage with 25% of the total maternal deaths followed by, 13% of the deaths are due to infections acquired. The same percentage of deaths due to unsafe abortions, eclampsia contributes to about 12% of the deaths, other 8% of deaths are due to obstructed labor and the remaining 8% and 20 % due to direct and indirect causes respectively. Causes such as Malaria, Iron deficiency, acquired immuno deficiency syndrome and cardiovascular disease, complex pregnancy all form a part of the indirect cause.

The graph below shows that one third of the maternal death are caused due to loss of blood or hemorrhage and can be prevented by providing timely blood transfusion services in cases of severe bleeding/hemorrhage during delivery. Blood supply is also essential for other emergency cases in addition to maternal emergencies.
FRUs at District Hospital Levels have adequate blood supply through authorized blood banks, however many FRUs at CHC level and Sub- district Hospital cannot be served by bigger blood banks particularly in remote areas where limited blood requirement does not justify establishing blood banks. Govt. of Gujarat supports the establishment of storage centers. The Drug and Cosmetics Act has been amended with the objective of setting up blood storage facilities at the FRUs, CHCs, and PHCs.

A Blood Storage center needs to obtain approval from the licensed blood bank from which the storage centre will get the supply. The Blood Storage Centre will obtain approval from the State Licensing after inspection of the facility. This approval will be valid for two years. A Blood Storage centre can be affiliated to more than one Blood Bank and the License of the Blood Storage Centre will be automatically cancelled if the
license of the issuing blood bank is cancelled. No additional staff is required at the Blood Storage center, a three day training is provided to doctors in charge to handle the standard operating procedure for Blood Storage units. Establishing the Blood Storage units will need minimum requirements such as Blood Bag Refrigerators with deep freezers, Insulated Carrier Boxes, Microscope and centrifuge. The space requirement is just 10 Sq meter area which is well lighted and clean.

FACILITY BASED NEW BORN CARE:

Today, the largest amount of neo-natal deaths occurs in India alone. About 25-30% of the total neonatal deaths happen in India. Over the recent years, the infant mortality rate has shown a diffident decline. Since 2004-2011, there has been a decline of 01% in the IMR on an average in India. As per the SRS report of 2011, the IMR rate was 53 per 1,000 live births. If we consider the total infant deaths (children under 05), neonatal deaths constitute 66% of these deaths in India and among these, nearly half of the neonatal deaths happen within the first two days after the child birth. Neonatal deaths occur mainly due to reasons such as issues during the prenatal conditions, respiratory infections and diarrhea. Malnutrition is an underlying cause for about one third of all deaths in childhood. Facility based new born care can be provided at different levels of health facilities. The table below summarizes the required new born care facilities at various levels.

**TABLE 1.3 NEW BORN CARE FACILITIES AT DIFFERENT LEVELS OF HEALTH CENTRES**

<table>
<thead>
<tr>
<th>Health Facility</th>
<th>All new born at Birth</th>
<th>Sick New born</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Health Center - Level I</td>
<td>New born corner in labor Rooms</td>
<td>Referral to FRUs.</td>
</tr>
<tr>
<td>Community Health Centers- FRUs at Level II</td>
<td>New born corner in labor Rooms and Operation Theater</td>
<td>Neonatal Stabilization Unit (NSU)</td>
</tr>
<tr>
<td>District Hospital-FRUs at Level III</td>
<td>New born corner in labor Rooms and Operation Theater</td>
<td>Special New born Care Units (SNCU)</td>
</tr>
</tbody>
</table>
Terminology:

**Newborn Care Corner (NBCC)**

New Born Care Corner is a corner space inside the labor room. Any abrupt care can be provided to new born child. This obligatory space has to be there in all health centers which perform deliveries.

**Newborn Stabilization Unit (NBSU)**

Neonatal Stabilization Unit is a facility within or in close proximity of the maternity ward where sick and low birth weight newborn is cared for periods. All First Referral Units (FRUs)/CHCs need to have a Neonatal Stabilization Unit, in addition to the newborn corner.

**Special newborn care unit (SNCU):**

Special newborn care unit (SNCU) is room in the surrounding area of the delivery Room for giving extra care to neonatal that is born sick. However any major surgery or supportive ventilation is not available in this facility any facility with more than 3000 deliveries per year should have a SNCU (most district hospitals and some sub-district hospitals fulfill this criterion).

**Advantages of FBNC:**

There are many advantages of having a facility based deliveries and new born care;

- ANM assistance can be taken easily as all deliveries take place at a common center rather than visiting each home for home deliveries.

- Emergency treatment can be given at the earliest which prove to be life saving for both mothers and new borns.
• All necessary equipments, drugs, and logistics are available on hand to handle the emergency obstetric care and emergency new born care.

• More effective care can be provided through the assistance of support staff like midwives, nurses etc.

• Blood transfusion facility can be easily available at these centers resulting in safe deliveries.

1.7 Demographic and Administrative Profile

Gujarat is a popular and one of the most leading states of India. It is situated on the extreme west side of India and is the northern most maritime. The total area of the state is 1, 95,984 Sq. Kms. The 1,600 Kms. long coastline of Gujarat extends from Kutch in North West to Saurashtra and South Gujarat regions.

FIGURE 1.4 MAP OF GUJARAT
Gujarat is bounded by Pakistan in the north, state of Maharashtra in the South, State of Rajasthan in the North–east, State of Madhya Pradesh in the east, with Arabian Sea towards the western side. Gujarat has island located at the southern coast called DIU and two union territories i.e. Daman and Dadra and Nagar Haveli. The North-eastern boarder of Gujarat is covered by mountain ranges in Banaskantha and Sabarkantha districts. Kutch and Saurashtra regions are largely dry and warm. The large area of Kutch is very difficult area covered by desert land.

The Gujarat Climate varies from humid coastal regions to extreme warm in the interiors. Summers are extremely hot and winters are cold especially in the areas like the desert of Kutch. A mild and pleasant climate along with some moderate rainfall can be expressed in the coastal regions and the eastern belt of Gujarat during monsoons. Eastern part of State has green as well as hilly area with average to heavy rainfall.

The Socio-demographic information of the State

The state of Gujarat has total population of 6,03,83,628 (2011 census), out of this, around 3,14,82,282 represented by male an 2,89,01,346 by female.

Table 1.4 Gujarat State Population Data

<table>
<thead>
<tr>
<th>Gujarati State Population (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Literacy rate in Gujarat during the year 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Person</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
</tbody>
</table>
There are total 34,670,817 people (%) representing from rural regions compared to only 25,712,811 (%) from urban. In comparison census 2001 where the urban population had been recorded 37.36% in 2011 it have been increased to 42.58% and decadal growth has been recorded 19.17%.

The overall literacy rate is 79.31% in which male constitutes 87.23% and female 70.73%. Disparity also noted among female belongs to rural regions have significantly less literacy rate (62.41%) then those belongs to urban regions (82.08%). The similar difference was found in case of male. There are total 26 districts in Gujarat having 225 talukas out of those, around 43 talukas are tribal.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>District Name</th>
<th>Population of the District 2011</th>
<th>Percentage Decadal growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Rural</td>
</tr>
<tr>
<td>1</td>
<td>Ahmedabad</td>
<td>7,208,200</td>
<td>1,149,436</td>
</tr>
<tr>
<td>2</td>
<td>Amreli</td>
<td>1,513,614</td>
<td>1,127,808</td>
</tr>
<tr>
<td>3</td>
<td>Anand</td>
<td>2,090,276</td>
<td>1,456,483</td>
</tr>
<tr>
<td>4</td>
<td>Banaskantha</td>
<td>3,116,045</td>
<td>2,702,668</td>
</tr>
<tr>
<td>5</td>
<td>Bharuch</td>
<td>1,550,822</td>
<td>1,022,413</td>
</tr>
<tr>
<td>6</td>
<td>Bhavnagar</td>
<td>2,877,961</td>
<td>1,697,808</td>
</tr>
<tr>
<td>7</td>
<td>Dahod</td>
<td>2,126,558</td>
<td>1,935,463</td>
</tr>
<tr>
<td>8</td>
<td>Dangs</td>
<td>226,769</td>
<td>202,074</td>
</tr>
<tr>
<td>9</td>
<td>Gandhinagar</td>
<td>1,387,478</td>
<td>787,949</td>
</tr>
</tbody>
</table>
Having obtained the population details of Gujarat state for both urban and rural areas, it would be essential to understand the infrastructure of the health care system in Gujarat.
State. This is would give an understanding of the way in which the health care centers are distributed to match with the population of the State.

### TABLE 1.6 DISTRICT WISE HEALTH INFRASTRUCTURE DETAILS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ahmedabad</td>
<td>7</td>
<td>12</td>
<td>43</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>57</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Amreli</td>
<td>7</td>
<td>13</td>
<td>38</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Anand</td>
<td>5</td>
<td>11</td>
<td>10</td>
<td>58</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>Banaskanta</td>
<td>10</td>
<td>19</td>
<td>80</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>5</td>
<td>Bharuch</td>
<td>6</td>
<td>7</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Bhavnagar</td>
<td>7</td>
<td>14</td>
<td>48</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>5</td>
<td>12</td>
<td>27</td>
<td>32</td>
</tr>
<tr>
<td>7</td>
<td>Dahod</td>
<td>7</td>
<td>12</td>
<td>65</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>8</td>
<td>Dangs</td>
<td>1</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>47</td>
</tr>
<tr>
<td>9</td>
<td>Gandhinagar</td>
<td>4</td>
<td>8</td>
<td>25</td>
<td>1</td>
<td>0</td>
<td>15</td>
<td>7</td>
<td>0</td>
<td>3</td>
<td>16</td>
</tr>
</tbody>
</table>

~ 23 ~
<table>
<thead>
<tr>
<th></th>
<th>District</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Jamnagar</td>
<td>7</td>
<td>11</td>
<td>38</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Junagadh</td>
<td>11</td>
<td>17</td>
<td>57</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>12</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>Kachchh</td>
<td>7</td>
<td>13</td>
<td>42</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>21</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>Kheda</td>
<td>12</td>
<td>50</td>
<td>64</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>14</td>
<td>Mehsana</td>
<td>8</td>
<td>16</td>
<td>57</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15</td>
<td>Narmada</td>
<td>4</td>
<td>4</td>
<td>21</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>Navsari</td>
<td>5</td>
<td>11</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>Panchmahal</td>
<td>9</td>
<td>13</td>
<td>67</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>18</td>
<td>Patan</td>
<td>6</td>
<td>14</td>
<td>34</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>Porbandar</td>
<td>2</td>
<td>4</td>
<td>10</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>Rajkot</td>
<td>7</td>
<td>15</td>
<td>48</td>
<td>83</td>
<td>0</td>
<td>1</td>
<td>12</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>21</td>
<td>Sabarkantha</td>
<td>10</td>
<td>21</td>
<td>64</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

~ 24 ~
Gujarat is a highly industrialized state of India and contributes to about 16% of the total industrial production in the nation. It has shown a rapid growth over the past few years. The GDP of Gujarat is nearly twice than that of the country. The GDP of Gujarat has grown up to 11.3 since the past 05 years in comparison to other leading states which are having a far below GDP. The per capita income of Gujarat was Rs 63,961 in 2009-10.

Objectives of National Rural Health Mission:

- Reduction in early neonatal mortality within first 48 hrs. Of the delivery.
- Reduction in post neonatal mortality due to diarrhoea and ARI.
- Reduction in neonatal deaths by timely transfer of sick neonates to referral hospitals.

The National Rural Health mission has set goals to be achieved by every state. On the lines of NRHM mission, Gujarat state has developed its own health mission which states;
Gujarat State Health Mission:

The goal of Gujarat state health mission is to develop and enhance the availability of proper health care services to the local community and all sections of society at a large. Special emphasis is given to the weaker sections, rural population, and people residing below poverty line, women and children.

FIGURE 1.5 ORGANOGRAM OF GUJARAT STATE HEALTH MISSION

The Organogram of Gujarat state Health mission has the chief minister as the apex body of the health mission, the SPMU & mission secretariat along with program committees are paralleled and managed by the executive committee headed by the Principal Secretary for Health who in-turn is headed by the State Health Society which is also the Governing body which is led by the Chief Secretary.
State Health Programs

- Chiranjeevi Yojana, Gujarat
- Rogi Kalyan Scheme - A Poor Patients Benefit Scheme
• Bal Sakha Yojana: This program is meant to take care of neonatal who are born to below poverty line parents by providing them free of cost services.

• Mamata Taruni Abhiyan: Special program for educating and providing nutrition to school pass out adolescent girls to prevent early marriage and pregnancy related complications.

• Beti Bachavo Abhiyan: This program was implemented to protect the girl child and prevent female femicide, thereby increase the sex ratio.

• Mamata Abhiyan: This scheme was introduced with the aim to reduce the maternal mortality rate, reduce the infant mortality rate and increase the institution deliveries.

• Immunization for SHAP: routine Immunization program to prevent spread of epidemics.

• Rastriya Swasthya Bima Yojana (RSBY): specific illness and diseases are covered for below poverty line patients and their families up to the cost of Rs. 30,000/-

• Janani Suraksha Yojana: Financial aid is provided to women who seek assistance from health centers at the pre delivery, during delivery and post delivery stages.

• School Health program: a special program for school going children for early diagnosis, promotion of positive health and awakening health consciousness among children.

• Janani Shishu Suraksha Karyakram: Free of cost services are provided to women who take assistance from the health centers for deliveries. Free care is given to both mother and sick new born babies.

Gujarat State comprises of six regions of the health sector. They are Ahmedabad, Gandhinagar, Bhavnagar, Surat, Vadodara and Rajkot each regions comprising of 5-6 districts.
Since Gujarat is a large state and has 26 districts, administrating all the districts would be complicated. Therefore to manage the supervision and monitoring of all the Health Centers effectually, the state has been divided in health regions. Each region has a certain number of districts based on the population and proximity of the districts. The Rajkot region is the largest of all the health regions and comprises of 04 districts that are Porbander, Jamnagar, Rajkot and Kutch. The management of health care system in Gujarat is done by the Ministry of Health for State through its health department as stated in the state health infrastructure. The First Referral units are distributed across the state and are identified as per the district and regions which they belong to.

In the current scenario, Gujarat state has 163 facilities working as FRUs, out of which 96 are Community health centers, 24 are district hospitals, 21 sub- district hospitals, 18 grant- in aid hospitals, and 4 municipal corporation hospitals. There are certain block health centers too in the state but they do not form a part of the FRUs.
It can be seen from the map that all the FRUs are not evenly distributed in the state of Gujarat. There is more concentration of FRUs towards the eastern and southern side of Gujarat as these regions are heavily populated compared to the western and Northern side. The western side of Gujarat comprises of Kutch district which is scarcely populated due to presence of the desert. Also the northern side of Gujarat particularly the Banskantha and Sabarkantha are hilly regions and have less population mainly comprising of the Tribal population. Hence as per the guidelines for the operationalization of FRUs set by Government of India, the FRU centers are identified based on the distribution of population around each health center in the state.