3 Research Methodology

3.1 Problem Description

Seventy two percent of the total population of India is Rural, half of which are below poverty line who continues to fight a hopeless and constantly losing battle for survival and health. Women who are considered to be of the right age for child bearing and children below the age of fifteen years constitute two third of the population in India. These two goups are teh mostly likely to suffer most severely from the the outcomes of the social and economic development. Currently, Health servives are provided through various means, especially in rural areas through primary Health centers, dispensaries, Government Hospitals which form a network of health services however these are not completely utilized by the rural population and remain out of reach of these communities.

More than three hundred lakh women are pregnant per year in India, out of which two hundred and 70 lakhs can give live births resulting in over one lakh thirty six thousand maternal deaths occurring in India and a higher number of new born deaths around one million occur every year. According to the IIPHS 2001 report, 63.3% women report complications while they are undergoing pregananc , around 37% women report complications at the time of child birth and around 44.4% report the same after the child birth that is during postnatal period.

Accoring to certain Trends, the infant mortality and perinatal mortality have shown a slow and steady decline. However ther have been very little decline in the neonatal mortality and number of still births remain the same for a a long time now in India. 10% of the new borns and infants out of the 27 million infants born in India die early before they complete the age of 5. India is the largest contributor of the total infant deaths
occurring around the world. Around 25% of the 10 million deaths of the infants under 05 years of age around the world occur in India. Neonatal deaths contribute to 50% of the deaths in the world.

The Government of India, has designated certain specific Community Health Centers, Sub District Hospitals and District hospitals as First Referral Units which can offer emergency obstetric and newborn care, but availability of proper staff is a major issue across all these centers. Non Availability of specialists’ staff for performing EmOC services has been the major limitation in improving maternal health. Most of the qualified doctors are unwilling to work in the rural areas, about eighty percent of them are in private hospitals and hence untrained and non qualified practitioners are offering health services in rural areas. Shortage of Human resources has been the largest factor in poor performance of the First referral units, Apart from this, provision for Blood transfusion facility for performing Cesarean section and other complication related interventions is the second prime cause for soaring MMR and the scarcity of Pediatricians and health care for new born are other major factors that contribute to infant mortality rate.

There are many FRU centers where despite having all the facilities, the number of the deliveries and Cesarean delivery performed is low. It is essential to understand these issues and create an action plan to overcome them. Available of equipments and drugs also contribute to the functioning of the first referral units but are not a major concern in most Referral units. A certain percentage of FRUs are still under performing in terms of the number of deliveries and c-section deliveries performed it is essential to understand the underlying cause for this.

There are some studies made on Public health issues in India, like Y Balarajan (2011) who identified the key challenges in providing equity care consist of an in equality in availability of essential requirements, unable to avail the health care services and appropriate staffing for health care centers, expensive treatment, constant rise in the expenditure to avail health care services and conduct factors that affect the requirements for appropraite services. Similarly SV Subramanian – (2006), M Das Gupta – (2005)
KS Jacob (2007) have emphasized on the inequalities observed in mortality and other health services provided based on socio-economic status.

3.2 Purpose of Study/ Research Objectives

The main purpose of this research is to analyze the current status of FRUs in the state and assess the difficulties faced by state government to make them fully operational. The explicit goals of this study are as follows:

- To identified high focus blocks and prepare a monitoring check-list for fact finding exercises where the nonfunctional and partial functional FRUs and identify the reasons for it.
- To indicate the problematic areas in saving infants and mothers’ lives and in areas where the FRUs facilities can be used effectively.
- To assess practices and policies for operationalization in different districts, with practical investigation (e.g. via FRUs analysis using MoH&FW guideline for Operationalization of FRUs, Facility base Newborn Care guidelines set by MoH&FW and Food and Drugs Control Authority guideline for Blood Storage Unit and Blood Banks) and research activities to get user viewpoint on usability (e.g. via collecting information, data and by questionnaires or interviews);
- To recommend to State Health Directors which factors should be emphasized, for the successful operationalization keeping a strong emphasis on the quality of service factors

3.3 Scope of study

Although the referral units’ concept is widely used across the globe, this study is concerned with the Gujarat state of India as the maternal and infant deaths are at soaring rate in India. However states like Gujarat have shown considerable improvements in reducing MMR and IMR rate in the current year. The state Health Ministry has put many plans in place to improve the functionality of FRUs in the state particularly the Comprehensive Emergency Obstetrics care. Gujarat state has a considerably high
number of populations situated in the rural areas and FRUs serve as a good means of providing health services to these areas.

The study is carried out for FRUs located in all six health regions including Ahmedabad, Gandhinagar, Bhavnagar, Surat, Rajkot and Vadodara region. Gujarat State has 26 districts and the rural population is majority in Gujarat hence providing health care through Primary and secondary level health system is essential.

Gujarat’s Socio–Economic indicators are better than all-India averages. Infant mortality rate is 46 in comparison to 53 in India; maternal mortality rate in Gujarat is 160 as compared to 254 in India. The Below poverty line population percent is 14.1 as compared to 26.1 in India. In addition to this the state has been a Chiranjeevi Yojana winner of Asian innovation Award and is a pioneer in PPP in Health care. Gujarat State was the first to introduce School Health Program with 8.4 million beneficiaries until 2006-07. Besides this, Gujarat is also stimulating the use of technology such as Hospital management information system and ORET projects. It is the First state in Gujarat to get National accreditation board for Hospitals and Laboratories (NABH/NABL) for civil hospitals, PHC and Drug testing.

Despite these developments on the health care front, there are some causes of concern which needs to be addressed. Such as the human development index has dropped from 4th to 6th. Infant mortality is higher than that of neighboring state Maharashtra, the Doctors population ratio is 1:1300 in comparison to Tamil nadu which is 1:800, and Nurses to doctors’ ratio is 0.5:1 which needs to be addressed urgently.

3.4 Databases and Sources

This research is based on both primary and secondary data. The use quesstionnaire and respective checklists were used for obtaining the primary data. Surveys were sent to all the FRU centers. Here the quesstionairs and checklists were utilized to congregate the quantitative information and the interviews were carried out to obtain qualitative
information required for this study. The researcher has used a structured non-disguised checklist and questionnaire containing both open ended and close ended questions. As stated above, This research involves both qualitative and Quantitative analysis of the data collected as this approach is supple and can easily be built upon. Certain modifications and changes were made to the plan and model during the data collection process so as to suit the research procedures and accommodate the situational changes.

To analyse the functioning and performance of the FRUs in Gujarat, data of all FRUs was collected from March 2011 - April 2010. In order to determine the improvements in performance and to make a comparison of previous years, data for FRUs has been collected from March 2009 - February 2011. The certain data pertaining to the critical determinants of FRUs is was unavailable during the period March 2011- April 2010 for Municipal Corporation Hospitals and Gant- in- aid Hospitals which have been designated as FRUs hence the study is restricted to the FRUs excluding the ones mentioned.

The literatures related to Mother and Child Health, referral units, Public health and other health services were studied and utilized for secondary data which include:

- Guidelines set for operationalization of FRUs, by Ministry of health and Family, Government of India.
- Facility Base Newborn Care Guideline by MoH&FW
- Food and Drug Control Authority (FDCA) guideline.
- Health Reports Published by the Gujarat state Commissionerate Health and Family Welfare Department.
- Various information related to Maternal Health and FRUs printed in Newspapers, Health Magazines
- Health Journals and Articles published on websites such as ,
  - www.mo.hfw.nic.in
  - www.mo.hfw.nic.in/N RHM/ip hs.ht m
  - www.mo.hfw.nic.in/N RHM.ht m
  - www.gujarat.india.com
  - www.gujhalth.go.v.in
3.5 Examination of Data

The research design is based on exploratory study approach to analyze data sets and summarize the main factors for success of First referral units.

3.5.1 Methodology

Research Design
The study intends to use Exploratory Research design to evaluate the functioning and operationalizing of the FRUs regarding the Comprehensive Emergency Obstetric Care, Newborn Care and Status of the Blood Storage Units and Blood Banks in the State. The focus group in this study were the low performing or weak delivery points where the total number of deliveries and caesarean operations are below the set target. Thus, this study determines the key aspects involved in operationalization of the FRUs. This research is planned to answers questions like

a) What are the critical determinants for operationalization of FRUs?
b) To what extent does the shortage of manpower affect the emergency services?
c) What factors determine availability of new born care at FRUs?
d) How can the shortage of manpower and blood supply be overcome?
e) Are the Trained specialist delivering their services to full extent?

Further steps in research include mapping of the existing health facilities, available manpower, and other resources for each district to determine the Gaps. For this research,
the use of indicator checklists is made as a tool since it is uncomplicated to put together a checklist; the checklists are error free and comparatively more efficient and reliable. As they are not complicated, they can be easily managed. These checklists were easily emailed to a large number of participants and certain of them were distributed in hand. The responses obtained on the checklist were in standard format and had objective information which made their tabulation non-problematic and effective. Also the main advantage of these checklists were that the participants could give out their own opinion and there was no presence of any person to persuade or influence them. Hence the responses obtained for checklists were not containing any preconceived notion. The analysed data is represented through the use of pie and bar charts, Histograms and graphs in this research.

For validation purposes, this research includes the parameters based on the Guidelines set for operationalization of First Referral Units set by Government of India. Information collected is based on 42 different indicators for each FRU. This information is then thoroughly mapped with the guidelines and the gaps have been identified on three critical determinants for FRUs i.e.

1. Availability of Specialists manpower for carrying out comprehensive emergency obstetric care.
2. Status of facility based new born care at all FRUs centers
3. Availability of Blood Supply and Blood Storage facility at these centers.

A separate checklist is prepared for each of the three critical determinants of FRUs mentioned above.

The Checklist for assessing the status of manpower will include indicators such as total deliveries performed, number of C-section conducted etc. similarly the checklists for assessing the facility based new born care would include indicators such as availability of Sick new born care unit, New born stabilizing units, availability of new born care specialists and so on. The status of the third determinant shall be evaluated based on the FDCA license obtained by Blood Storage units, the number of blood banks and Blood
Storage units available at each FRU. The data obtained on the lines of these indicators will be analyzed using Microsoft excel 7.0 and plotting graphs and Charts from it. This research principally targets the concerns raised in the operationalization of First referral units, recommendations of National rural health mission and implementation of IPHS standards.

Core Issues for investigation include:

- Availability of resources (staff, funds, equipments etc)
- Current status at existing FRUs and selection of CHC, PHCs and other sub-district hospitals.

Other Related issues that aroused:

- Indicators to measure the performance of the FRUs
- Guidelines for the operationalization of FRUs
- Demands for FRU services keeping end user acceptance, accessibility and awareness.

The main steps carried out for the study are:

1. Carrying out facility survey
2. Analysis of findings of facility survey
3. Analysis of trend in indicators
4. Discussion with medical doctors, ANM,
5. Discussion with Chief District Health Office, Regional Program coordinators Office

Key Indicators include:

1. C-Section
2. Institutional Delivery  
3. New born care equipments  
4. Availability of Blood Banks  
5. Status of Blood Storage Units  

**Sampling Technique:**

“Census” method is used for the research for data collection and no sampling technique is used. This study is carried out for complete enumeration of FRU centers located across Gujarat state. The researcher will be collecting data on variables from every FRU center as the population size of FRUs is small hence; the census method is used for data collection.

**Sample Size:**

This research incorporates the data from all 163 FRUs located in Gujarat state. The grant-in-aid hospitals and Municipal Corporation Hospitals which are designated as FRUs are excluded from the study as accurate and timely response was unavailable from these centers.

**Research Area:**

Gujarat state has been chosen for this research as the maternal mortality rate is high in this state. The state Health Ministry has incorporated many plans for improvements in the CEmOC services provided at FRU centers. The study is carried out for FRUs located in all six health regions including Ahmedabad, Gandhinagar, Bhavnagar, Surat, Rajkot and Vadodara region. Gujarat state has a lot of people living in villages and FRUs serve as a good means of providing health services to these areas. Hence this study covers all the first referral units located in the rural and tribal regions of Gujarat state.
3.6 Implication of study

First referral units play a vital role in the providing emergency services in rural areas. The main objective of Government is designate more and more centers as FRUs and operationalize them at the earliest to facilitate the public health. However, there are many centers which are showing poor performance and the public is not benefiting from these. Besides the State and Central Governments’ Health Department, very few studies have been made on this subject, the ones that have been made more generic in nature and focus on the maternal health and other public health related issues with limited description and sample of FRUs.

This study covers the entire list of FRUs in the state with a clear focus on the critical determinants of quality of services at these centers and their current status in terms of availability and performance. The Gap analysis of these FRU centers will present the areas of improvements and key focus points for improving the performance of these centers. This research also provide recommendations on overcoming the shortages in Manpower, Blood Supply and new born care and thereby applying these recommendations can reduce the maternal and infant deaths considerably. The Best Practices applied in Gujarat can be followed by other states in improving the overall maternal and child health in the country.

3.7 Restriction of Study

This study is restricted to First Referral Units in Gujarat State, although the Grant- in-aid hospitals and Municipal Corporation Hospitals are designated as FRUs in the state, accurate date for these centers was not available, hence the data considered here is obtained from all FRU centers.