CHAPTER - 3

THEORETICAL AND CONCEPTUAL FRAMEWORK AND METHODOLOGY OF THE STUDY

The present chapter explains the theoretical framework related to different aspects of health and the concepts relevant to the present study. The detailed research design is also explained in this chapter. The chapter is divided into two sections (Section 3.1 and 3.2). Theoretical and Conceptual Framework is discussed in section 3.1 and section 3.2 explains the methodology for conducting the study including sample design and analytical tools used in the study.

3.1 Theoretical and Conceptual Framework

3.1.1 Meaning of Health

Health is a multifaceted concept and thus it is very difficult to define it precisely. General notion about health is the absence of illness due to physiological and organic deficiencies. It is mainly concerned with an individual body's mechanical ability and functioning of basic parts and organs of human body. The broader definition of health, however, does not mean mere absence of disease but it encompasses the whole range of personal, physiological, mental, social and even moral well-being of a person. The constitution of the World Health Organization's (WHO) defines health as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity". However, several scholars have criticized this definition. Health in actual sense is the adequacy of physical and mental capacity of a person to enjoy life fully and to reach his maximum level of productive capacity.

Health is one of the fundamental rights of every citizen. According to Article 21 of Indian constitution, the State should ensure good health and nutritional wellbeing of its entire people.

3.1.2 Dimensions of Health

WHO definition envisages three specific dimensions of health namely physical, mental and social. Many more may be cited viz. spiritual, emotional, vocational and political dimensions to health (Park 2005). As the knowledge base grows, the list may be expanding. Although these dimensions function and interact with one another and each has its own nature. The conceptual descriptions are given in the following:

(i) Physical Dimension: Physical Dimension conceptualizes health biologically as a state in which every cell and every organ is functioning at optimum capacity and in perfect harmony with the rest of the body. At the community level, indicators such as death rate, infant mortality rate and expectation of life may assess the state health.

(ii) Mental Dimension: Mental Dimension would mean that good mental health is the ability to respond to the many varied experiences of life with flexibility and a sense of purpose. More recently, mental health has been defined as "a state of balance between oneself and other, coexistence between the realities of the self and that of other people and that of the environment."

(iii) Social Dimension: Social dimension implies harmony and integration within the individual, between each individual and other members of society and between individuals and the world in which they live. The social dimension of health includes the levels of social skills one possesses, social functioning and the ability to see oneself as a

member of a larger society. In general, social health takes into account that every individual is part of a family and of wider community and focuses on social and economic conditions and well – being of the "whole person" in the context of his social network.

(iv) Spiritual Dimension: Spiritual dimension refers to that part of the individual which reaches out and strives for meaning and purpose in life. It is the intangible "something" that transcends physiology and psychology.

(v) Emotional Dimension: Emotional dimension has more close relation with mental health dimension. Mental health can be seen as "knowing" or "cognition" while emotional health relates to "feeling".

(vi) Vocational Dimension: Vocational dimension or aspect of life is a new dimension. It is part of human existence. When work is fully adapted to human goals, capacities and limitations, work often plays a role in promoting both physical and mental health.

Since health is a very broad concept and as such there are few other dimensions viz; philosophical dimension, cultural dimension, socio-economic dimension, environmental dimension, educational dimension, nutritional dimension, curative dimension, preventive dimension etc.

3.1.3 Determinants of Health

Health is influenced by several factors that lie both within the individual and outside the environment in which he or she lives. Conceptually, the health of individuals

and communities may thus be the result of many interactions. The important determinants of health are as follows:

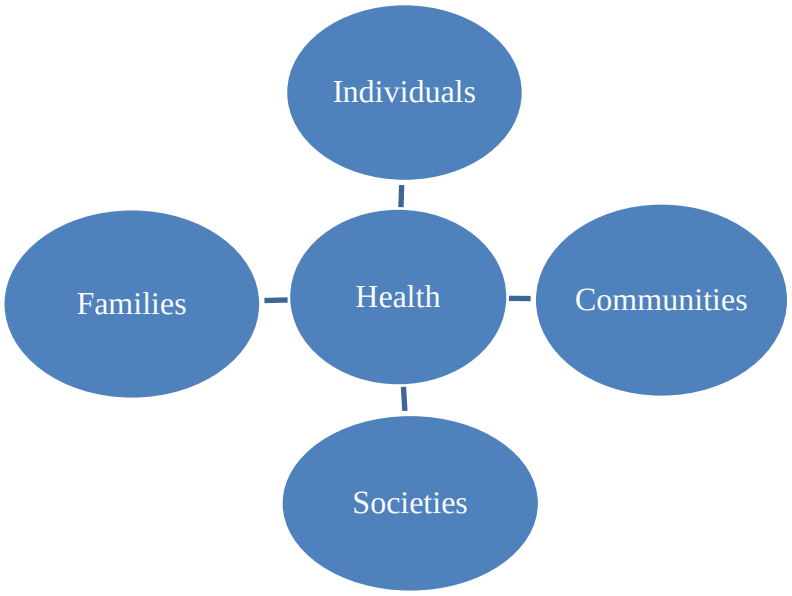

Fig. 3.1: Diagrammatic Representation of Determinants of Health

Figure 3.1 shows the major determinants of health which are viz; individuals, families, communities and societies. These four determinants are in turns influenced by several factors. Individual health is affected by science and technology, aging of the population, socio-cultural customs and environment. Similarly, equity and social justice, gender, information and communication determine family health. The health of the community is affected by biological, behavioral and human rights. Society's health is dependent on variables like environment, socio-economic condition and health system. Thus, health should be viewed not in terms of merely curing a disease, but as an indicator of the level of social, economic, material and environmental development.

3.1.4 Health Indicators

Indicators of health are required not only to measure the health status of a community, but also to compare the health status of one country with that of another; for assessment of health care needs; for allocation of scarce resources; and for monitoring and evaluation of health services, activities and programmes. Indicators help to measure the extent to which the objectives and targets of a programme are being attained.

Each dimension of health is influenced by numerous factors, some are known and many are unknown. This means health can be measured multi-dimensionally. Therefore, the aspect of health measurement is a complicated one even for professionals. According to WHO, there are several indicators which may be classified as:

1. Mortality indicators

2. Morbidity indicators

3. Disability rates

4. Nutritional status indicators

5. Health care delivery indicators

6. Utilization rates

7. Indicators of social and mental health

8. Environmental indicators

9. Socio-economic indicators

10. Health policy indicators

11. Indicators of quality of life

12. Other indicators

1. Mortality Indicators

(i) Crude Death Rate: This is considered as a fair indicator of the comparative health of the people. It is defined as the number of deaths per 1000 population per year in a given community. It indicates the rate at which people are dying. Health cannot be measured only by the number of deaths that occur in a community. However, in many countries, the crude death rate is the only available indicator of health.

(ii) Life Expectancy: Life expectancy at birth is the measurement of "the average number of years that a person is expected to live, based on the year of their birth, their current age and other demographic factors including sex.

(iii) Infant Mortality Rate: Infant mortality rate is the ratio of deaths under 1 year of age in a given year to the total number of live births in the same year; usually expressed as rate per 1000 live births. It is one of the most universally accepted indicators of health status not only of infants, but also of whole population and of the socio-economic condition under which they live.

(iv) Maternal Mortality Rate: Maternal mortality rate is defined as the number of registered deaths due to birth or pregnancy related complications per 1,00,000 registered live births. Maternal mortality accounts for the greatest proportion of deaths among women of reproductive age in most of the developing world, there are enormous variations in maternal mortality rate according to country's level of socioeconomic status.

(v) Disease Specific Mortality: Disease specific mortality is the number of deaths due to given disease per time, usually expressed per 1,000 or 100,000 persons per year. As countries begin to extricate themselves from the burden of communicable diseases, a number of other indicators such as deaths from cancer, cardiovascular diseases, accidents, diabetes, etc. have emerged as measures of specific disease problems.

(vi) Age Specific Mortality: Age specific mortality is the number of deaths in a given age group per time, usually expressed per 1,000 or 1,00,000 persons per year. Infant mortality rate is a type of age specific mortality.

2. Morbidity Indicators: Morbidity refers to the disease and illness, injuries, and disabilities in a population. To describe health in terms of mortality rates only is misleading. This is because mortality indicators do not reveal the burden of ill health in a community. Therefore, morbidity indicators are used to supplement mortality data to describe the health status of a population.

The following morbidity rates are used for assessing ill health in the community:

(a) Incidence and prevalence

(b) Notification rates

(c) Attendance rates at outpatient departments, health centres etc.

(d) Admission, readmission and discharge rates

(e) Duration of stay in hospital and

(f) Spells of sickness or absence from work or school

A number of factors are associated with morbidity and disability, including physical / medical conditions, health behaviors and lifestyle, demographic and economic factors such as education and income, and psychosocial and cultural determinants.

3. Disability Rates: Disability rates related to illness and injury have come into use to supplement mortality and morbidity indicators. The commonly used disability rates is divided into two groups (a) event type indicators and (b) person type indicators

(a) Event type indicators:

(i) Number of days of restricted activity

(ii) Bed disability days

(iii) Work loss or school loss days within a specified period

4. Nutritional Status Indicators: Nutritional status is a positive health indicator. Nutritional status indicators are considered as important indicators of health status, which are anthropometric measurements, e.g., weight and height, mid-arm circumference etc.

5. Health Care Delivery Indicators: The frequently used indicators of health care delivery are:

a. Doctor-population ratio

b. Doctor-nurse ratio

c. Population-bed ratio

d. Population per health / sub-centre

e. Population per traditional birth attendant

These indicators reflect the equity of distribution of health resources in different parts of the country, and of the provision of health care.

6. Utilization Rates: In order to obtain additional information on health status, the extent of use of health services is often investigated. Utilization of services or actual coverage is expressed as the proportion of people in need of a service who actually receive it in a given period, usually a year. It is argued that utilization rates give some

indication of the care needed by a population, and therefore, the health status of the population can be measured.

7. Indicators of Social and Mental Health: As long as valid positive indicators of social and mental health are scarce, it is necessary to use indirect measures, viz; indicators of social and mental pathology. These include suicide, homicide, other acts of violence and other crime; road traffic accidents, juvenile delinquency; alcohol and drug abuse; smoking; consumption of tranquillizers; obesity etc. These social indicators provide a guide to social action for improving the health of the people.

8. Environmental Indicators: Environmental indicators reflect the quality of physical and biological environment in which, diseases occur and in which the people live. They include indicators relating to pollution of air and water, radiation, solid wastes, noise, exposure to toxic substances in food or drink. Among these, the most useful indicators are those measuring the proportion of population having access to safe water and sanitation facilities.

9. Socio-Economic Indicators: These indicators do not directly measure health status. Nevertheless, they are of great importance in the interpretation of the indicators of health care. These include:

a. Rate of population increase

b. Per capita GNP

c. Level of unemployment

d. Dependency ratio

e. Literacy rates, especially female literacy rates

f. Family size

g. Housing: the number of persons per room

h. Per capita "calorie" availability

10. Health Policy Indicators: The single most important indicator of political commitment is "allocation of adequate resources". The relevant indicators are: (i) proportion of GNP spent on health services (ii) proportion of GNP spent on health related activities (iii) proportion of total health resources devoted to primary health care.

11. Indicators of Quality of Life: Life expectancy as an indicator of health is no longer considered adequate, especially in developed countries, and attention has shifted more toward concern about the quality of life enjoyed by individuals and communities. The physical quality of life index is one composite index which consolidates three indicators viz; infant mortality, life expectancy at age one, and literacy.

12. Social Indicators: According to WHO (2003), social determinants of health are: aboriginal status, early life, education, employment and working conditions, food security, gender, health care services, housing, income and its distribution, social safety net, social exclusion, unemployment and employment security.

3.1.5 Different Stages of Women's Life

The continuum of an individual's life can be divided into several life stages with certain features characteristic of each stage. Biologically, life stages of a typical woman are divided into infancy, puberty (adolescence), sexual maturation (reproductive age), pre menopause, and menopause years. Generally, in the first stage ie; from one year to ten years, no biological changes have taken place in their body and so there is lesser chance of occurrences of female disease. The life of a woman mainly starts from their adolescent period when first time they face menstrual problem. Adolescence is normally

characterized by low levels of disease and death; it is the period of life when mortality rates are lowest. However, it is a transitional stage of physical and psychological human development that generally occurs during the period from puberty to legal adulthood. The World Health Organization (WHO) defines adolescents as the period between 10 and 19 years of age. It is a period of life with specific health and developmental needs and rights. It is also a time to develop knowledge and skills, learn to manage emotions and relationships, and acquire attributes and abilities that will be important for enjoying adolescent years and assuming adult roles.

World Health Organization (WHO) has defined reproductive health as a "state of complete, physical, mental and social well-being and not merely the absence of disease or infirmity, reproductive health addresses the reproductive processes, functions and system at all the stages of life. The term reproductive age group refers to the active reproductive years in women starting with menarche around 12-14 years and ending with menopause around 45-49 years. For demographic purposes, reproductive age group is usually defined as 15-49 years or 12-49 years.

Pre-menopause is a term used to mean the years leading up to the last period, when the levels of reproductive hormones are already becoming more variable and lower, and the effects of hormone withdrawal are present. Pre-menopause often starts some time before the monthly cycles become noticeably irregular in timing. Other symptoms may include vaginal dryness, trouble sleeping, and mood changes. The severity of symptoms varies between women. This change usually begins after the age of 35 years of women as per medical science.

Menopause, also known as the climacteric, is the time in most women's lives when menstrual periods stop permanently, and the woman is no longer able to have children. Menopause typically occurs between 45 and 55 years of age. Medical professionals often define menopause as having occurred when a woman has not had any vaginal bleeding for a year. It may also be defined by a decrease in hormone production by the ovaries. Menopause is usually a natural change. Menopause is the opposite of menarche, the time at which a girl's periods start.

3.1.6 Nutrition and Health

Nutrition may be defined as the science of food and its relationship to health. It is concerned primarily with the part played by nutrients in body's growth, development and maintenance. The word nutrient or "food factor" is used for specific dietary constituents such as proteins, vitamins and minerals. Dietetics is the practical application of the principle of nutrition; it includes the planning of meal for the well and sick. Good nutrition means, "Maintaining a nutritional status that enables us to grow well and enjoy good health".

The science of human nutrition is mainly concerned with defining the nutritional requirements for the promotion, protection and maintenance of health in all groups of the population. Such knowledge is necessary in order to assess the nutritional adequacy of diets for growth of infants, children and adolescents, and for maintenance of health in adults of both sexes. The most widely used term to define the amount of nutrient needed by the body is "recommended daily intake" or allowance (RDA). The term "recommended daily intake" or allowance (RDA) "is defined as the amounts of nutrient sufficient for the maintenance of health in nearly all people".

Energy (Nutritional) Requirement of Adults

The energy requirement of an individual might be defined as the level of energy intake in relation to expenditure which is least likely to result in obesity or heart disease or which is most likely to prolong active life.

Table 3.1: Recommended Daily Intake of Energy (WHO: 1995)

Adults	Category	Body weight in kg	Energy allowance per day (k.cal)
Males	Light work	60	2425
	Moderate work		2875
	Heavy work		3800
Females	Light work	50	1875
	Moderate work		2225
	Heavy work		2925

Source: World Health Organization Report, 1995

The energy requirement decreases with age because of a fall in Basic Metabolic Rate (BMR) and a decrease in physical activity in most of the persons. In general there is a two per cent decline of resting metabolism for each decade for adults. The FAO / WHO committee has suggested that after the age of 40 years, requirement should be reduced by 5 percent per each decade until the age of 60, and by ten per cent for each decade thereafter.

3.1.7,Anthropometric and Nutritional Status

Anthropometric measurement such as height, weight, skin fold thickness and arm circumference are valuable indicators of nutritional status. The use of anthropometry as an indicator of nutritional and health status of adults has now been well-established (World Health Organization, 1995). The body mass index (BMI) is an indicator of overall

adiposity and low BMI and high levels of under-nutrition (based on BMI) is a major public health problem especially among rural under privileged adults of developing countries (World Health Organization, 1995). Although adult nutritional status can be evaluated in many ways, the BMI is most widely used because its use is inexpensive, non-invasive and suitable for large-scale surveys (Lohman et al., 1988; Ferro-Luzzi et al., 1992; James et al., 1994). Thus, BMI is the most established anthropometric indicator used for assessment of adult nutritional status (Lee and Nieman, 2003). A BMI <18.5 kg/m^2 is widely used as a practical measure of chronic energy deficiency (CED), i.e., a 'steady' underweight in which an individual is in energy balance irrespective of a loss in body weight or body energy stores (Khongsdier, 2005). Such a 'steady' underweight is likely to be associated with morbidity or other physiological and functional impairments (James et al., 1988; Shetty and James, 1994; World Health Organization, 1995).

Another anthropometric measure that can be used to evaluate adult nutritional status is mid upper arm circumference (MUAC). It has been shown that MUAC is particularly effective in the determination of malnutrition among adults in developing countries (James et al., 1994).

Body Mass Index (BMI), is one of the main indicator used to assess their nutritional status and health. The body mass index (BMI) can be used to assess both thinness and obesity. The BMI is defined as the weight in kilograms divided by the height in metre square (kg/m^2). The BMI value is classified into five categories viz; acute malnutrition (whose BMI < 18.5), malnutrition (18.5<BMI<19.99), normal (20<BMI<25), over weight (25.001<BMI<29) and obesity (BMI>30). Acute malnutrition

represents a state of very poor health. Malnutrition also represents a state of poor. On the other hand, overweight and obesity also represent a state of poor health.

3.1.8 Primary Health Care as an Approach to Achieve Health for All (HFA) 2000

In 1977, the Alma-Ata International Conference on Primary Health Care reaffirmed 'Health For All' as the major social goal of the governments, and stated that the best approach to achieve the goal of HFA is by providing primary health care, especially to the vast majority of undeserved rural people and urban poor. It was envisaged that by the year 2000, at least essential health care should be accessible to all individuals and families in an acceptable and affordable way, with their full participation. This Conference called on all governments to formulate national policies, strategies and plans of action to launch and sustain primary health care as part of a national health system. It is for providing primary health care according to its own circumstances (WHO 1977).

The proposed new strategy of HFA made the nations to achieve or strive to attain tremendous growth in their overall performance. Many nations could eradicate epidemics, communicable diseases etc largely. The WHO report describes how the past few decades, the period following the Declaration of Alma Ata had witnessed revolutionary gains in life expectancy. These gains build on progress that began for some countries in the late 19th century. Among today's high-income countries, life expectancy increased by 30 to 40 years in this century. Most of today's low and middle-income countries have experienced even more dramatic gains, although remaining inequalities needlessly burden disadvantaged populations and prolong their poverty. Under WHO's leadership almost all countries have eradicated smallpox, one of the most devastating

diseases of history, and today a substantial majority of the world's population faces relatively low risk from infectious diseases of any sort. These health gains have transformed quality of life and created conditions favoring sustained fertility reductions and consequent demographic changes. In many developing countries, for example the total fertility rate – the expected number of children a woman will bear over her lifetime – declined from over six in the late 1950s to about three at present. These health and demographic changes have contributed directly to the global diffusion of rapid economic growth that, like the health revolution, constitutes an extraordinary accomplishment of the 20th century. In an important sense, the world has made great progress towards better Health for All (WHO Report 2000).

Even after 2000, the nations are facing challenges that are unique and specific. The people are now facing the problems of high morbidity both from re-emergence of communicable diseases, new life style diseases (non communicable diseases) like cancer, HIV, diabetics, blood pressure, cardiac vascular disease and the second generation problems like the ageing of population. Moreover, there remains the challenge of sustaining the privileged health status.

India gives prime place to safeguard the health of the people and Article 246 of the Constitution of India covers all the health subjects. These have been enumerated in the seventh schedule under three lists viz; Union lists Concurrent lists and State lists. In Article 47 of the Indian Constitution under the Directive Principles of States Policy states that 'the state shall regard the raising of level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties' (Indian Constitution). There are many health intervention programmes implemented to raise the

health status of the citizens. The directives of WHO are carried out to its best and primary health care approach are the one of the remarkable contributions of India in promotion of health. In the very beginning of the new millennium 2000, in order to address contemporary health requirements, the Central government has adopted two developmental health programme interventions, viz; Millennium Development Goals (MDGs) and National Rural Health Mission (NRHM).

(i) The Millennium Development Goals

MDGs are an internationally agreed development aspirations for the world's population to be met by 2015. The representatives of 189 countries met at Millennium Summit in New York in 2000 to adopt United Nations Millennium Declarations. The MDGs place health at the heart of development and represent commitments by Government throughout the world to do more to reduce poverty and hunger and to tackle ill health, gender inequality, lack of education, access to clean water, and environmental degradation (WHO 2003; UNDP 2003).

There are eight Millennium Development Goals mentioned in the following:

• Eradicate extreme poverty and hunger

• Achieve universal primary education

• Promote gender equality

• Reduce child mortality

• Improve maternal health

• Combat HIV / AIDS, malaria and other communicable diseases

• Ensure environmental sustainability

• Develop global partnership for development

These goals have underlined the importance of improving health, and particularly the health of mothers and children, as an integral part of poverty reduction. The health of mothers and children is a priority, which emerged long before, and it builds upon a hundreds of programmes, activities and experiences. What is new in the last decade, however, is the global focus of the MDGs and their insistence on tracking progress in every part of the world. Moreover, the nature of the priority status of maternal and child health (MCH) has changed over time. Mothers and children were previously thought of as targets for well-intentioned programmes, they now increasingly claim the right to access quality care as an entitlement guaranteed by the State. In doing so, they have transformed maternal and child health from a technical concern into a moral and political imperative (UNICEF 2004).

B. National Rural Health Mission

With the objective of providing more effective, accessible, affordable, accountable and reliable health care, NRHM was launched in India in 2005. The Mission aims at achieving health indicators like reduction in Infant Mortality Rate (IMR), Maternal Mortality Ratio (MMR) and Total Fertility Rate (TFR) within seven years (2005- 2012). These initiatives correspond to the Key performance areas outlined by NRHM:

• Institutional strengthening

• Improving access to better health care and quality services

• Accessibility of health care to the under privileged and marginalized

• Reduction in Infant Mortality Rate (IMR) and Maternal Mortality Ratio

• Universal access to public health services such as women's health, child health, water, sanitation & hygiene, immunization, and nutrition.

• Prevention and control of communicable and non-communicable diseases, including locally endemic diseases

• Access to integrated comprehensive primary health care

• Population stabilization, gender and demographic balance

• Revitalize local health traditions and mainstream AYUSH

• Promotion of healthy life styles

The above analysis shows that all health interventions either universally accepted or of the nations are aimed at the unique status and dignity of the every individual person. A person is entitled to have a healthy life and the resources essential for satisfying health needs should be available within the reach of everyone. In short, the goal of WHO remains a distant dream in most of the developing nations and especially of marginalized groups like fisher folk at large.

3.1.9 Health Care

Health care is a public right and it is the responsibility of governments to provide this care to all people in equal measure. Health care is the maintenance or improvement

of health via the diagnosis, treatment and prevention of disease, illness, injury, and other physical and mental impairments in human beings. Health professionals (providers or practitioners) deliver health care. It includes the work done in providing primary care, secondary care, and tertiary care, as well as in public health.

(i) Primary Care

Primary care refers to the work of health professionals who act as a first point of consultation for all patients within the health care system. Such a professional would usually be a primary care physician, such as a general practitioner or family physician, a licensed independent practitioner such as a physiotherapist, or a non-physical primary care provider (mid-level provider) such as a physician assistant or nurse practitioner. Primary care is often used as a term for the health care services, which play a role in the local community. It can be provided in different settings, such as Urgent care centres which provide services to patients same day with appointment or walk in bases. Common chronic illnesses usually treated in primary care may include, for example: hypertension, diabetes, asthma, COPD, depression and anxiety, back pain, arthritis or thyroid dysfunction. Primary care also includes many basic maternal and child health care services, such as family planning services and vaccinations.

(ii) Secondary Care

Secondary care is the health care services provided by medical specialist, dental specialist and other professionals who generally do not have first contact with patients: for example, cardiologists, urologists, endodontists and oral and maxillofacial surgeons. The term “secondary care” is sometimes used synonymously with “hospital care”. However many secondary care providers do not necessarily work in hospitals, such as,

psychiatrists, clinical psychologists, occupational therapists, most dental specialties or physiotherapists, and some primary care services are delivered with hospitals. Depending on the organization and policies of the national health system, patients may be required to see a primary care provider for a referral before they can access secondary care.

(ii) Tertiary Care

Tertiary Care is specialized consultative health care, usually for inpatients and on referral from primary or secondary health professionals, in a facility that has personnel and facilities for advanced medical investigation and treatment, such as a tertiary referral hospital. Example of tertiary care services are cancer management, neurosurgery, cardiac surgery, plastic surgery, treatment for severe burns, advanced neonatology services, palliative, and other complex medical and surgical interventions.

Since health is influenced by a number of factors viz; adequate food, housing, basic sanitation, healthy lifestyles, protection against environmental hazards and communicable diseases, the frontiers of health extend beyond the narrow limits of medical care. It is thus clear that 'health care' implies more than 'medical care'. It embraces a multitude of services provided to individuals or communities by agents of the health services or professions, for the purpose of promoting, maintaining, monitoring, or restoring health (Last, 1993). The term 'medical care' is not synonymous with 'health care'. It refers chiefly to those personal services that are provided directly by physicians or rendered as the result of physicians' instructions. It ranges from domiciliary care to resident hospital care. Medical care is a subset of health care system.

3.1.10 Demand for Health Care

Health economics is a branch of economics, which deals with the application of

the principles and theories of economics to healthcare sector. It addresses the issues such as the demand for healthcare services in the economy, allocation of resources for the development of healthcare facilities, their supply through public and private sector agencies and the gaps that exists between the demand for and supply of healthcare services in the economy. Healthcare services are limited in supply and the demand for healthcare services is ever increasing and unlimited. Again, resources to meet the demand for healthcare services are limited in supply. The demand for healthcare is a derived demand in the sense that it derives its demand from the state of health and awareness among the population of the country about significance of good health. People demand healthcare services as a means by which people achieve good health that builds the standard of human capital of a nation. Unlike other goods and services, which are demanded for consumption, healthcare services are demanded for ensuring good health. Thus, health is a capital as well as consumer good.

Health care is not a single commodity or service but it consists of a basket of services, which are consumed simultaneously. Again, all health care services are not equally urgent and hence the elasticity of demand for health care services varies according to nature of service and urgency of availing those services. There might be a differential demand for inpatient services, outpatient services, acute and preventive care, lab work, pharmaceuticals, x-rays, and a variety of other goods and services. This heterogeneity in healthcare demand suggests that it would be more informative if separate demand elasticity for each category of health services is estimated.

3.2 Methodology

The methodology of the study is divided into two parts viz; methodology for data collection and methodology for data analysis which is discussed in the following two sub-sections 3.2.1 and 3.2.2.

3.2.1 Methodology for Data Collection

The study is based both on primary and secondary data. Primary data is collected from the field by preparing a scheduled questionnaire. A three-stage stratified random sampling technique is used for collecting the primary data. In Cachar district there are 15 blocks. Out of these 15 blocks, 50 per cent (approximately) blocks are selected in the first stage. In the second stage, from each selected block, 10 per cent (approximately) villages are selected. The selection of blocks and villages are based on large demographic size of women population. In the final stage, 8 households from each selected village are selected randomly from Muslim community. Therefore, approximately 450 households are the final number of observations for this study and 586 is the final number of respondent from these 450 households.

Secondary data are collected from various sources viz; Census Reports of India, Year Book issued by the Department of Family Welfare of the Ministry of Health and Family Welfare, National Rural Health Mission, Hand Book of Health Statistics of Assam, District Statistical Hand Book and Statistical Abstracts of India and Assam, Medical Bulletins National Family Health Survey (NFHS).

3.2.2 Methodology for Data Analysis

There are five objectives of this study. In this sub-section, the methodology for data analysis is explained in details according to the objectives mentioned in Chapter 1.

The first objective i.e. the health status of the Muslim married women is analyzed on the basis of some diseases which are common in case of women. Total 42 types of diseases are considered in the study. As per medical sciences, women are categorized into four groups based on the biological changes of the women[1]. These groups are adolescence stage i.e. 12-18 years of age group, reproductive stage i.e. 19-35 years of age group, pre-menopause stage i.e. 36-45 years of age group, and menopause stage i.e. 46 year and above age group. As the study is focused only on the married women group, therefore only the last three groups are considered for this study. However, here the reproductive group is considered from 15 years of age group to 35 years because practically rural women especially Muslim women in rural area are getting married before 18 years of age. The health problems are analyzed according to the different age groups because patterns and nature of most of the diseases are different for different age group. Percentage of diseased women out of total women is calculated through dividing total number of reported women of a particular disease of a specified age group by total number of women of that specified age group multiplied by 100. Again, percentage of diseased women out of total affected women is calculated by dividing total number of reported diseased women of a particular disease of a specified age group by total number of affected diseased women of that age group multiplied by 100. To calculate the

[1] The groups are divided into four groups with consultation of registered medical practitioners. In Indian situation generally it is difficult and in most cases it is problematic for a woman to conceive an issue after the age 35, though there may be exception. Accordingly, from the age 19–45 is divided into two groups viz; reproductive and pre-menopause.

percentage of diseased women out of total reported diseased women, total number of reported diseased women of a particular disease in a specified age group is divided by total number of reported diseased women of a particular age group is multiplied by 100.

For the study, dimensional index is used to show the health status of the women in different blocks of the Cachar district and show which block has better health status compare to others. To calculate the women illness index, Kerala is considered as the developed state because it has minimum percentage of ill women (ten per cent) and Orissa is considered as the less developed state because it has maximum percentage of ill women (65 per cent). The illness index

is $$\textit{Women}\ \text{Illness Index} = \frac{\text{Actual \% of sick women - \% of minimum sick women}}{\text{\% of maximum sick women - \% of minimum sick women}}$$

The health status or nutritional status of Muslim married women is also analyzed with the help of Body Mass Index (BMI).

To identify the socio economic determinants of health status, a multiple regression equation is considered which is specified in the following:

$$BMI = \alpha + \beta_1(AGE) + \beta_2(EDLR) + \beta_3(HS) + \beta_4(FE) + \beta_5(ME) + \beta_6(MA) + \beta_7(AH) + \theta_2 D_2 + \theta_3 D_3 + U_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where α is the intercept parameter and β's are the slope parameter or coefficient of the explanatory variables used in the equation specification. Some of the explanatory variables are treated as a qualitative variable or dummy variable, though these dummy variables are quantified by taking binary options. u_i is the stochastic error component which follows normal distribution with zero mean and common variance σ^2.

BMI=Body Mass Index

AGE= Age of the respondents in Years at the time of survey.

EDLR= Education level completed by the respondent in years at the time of survey

HS= Household size

FE= Monthly food expenditure of the family

RMME= Monthly medical expenditure of the family

MA= Marital age of the respondent

AH= Area of house

HC= Housing condition (which is taken as a dummy)

$$D_2 = \begin{cases} 1 \text{ for Semi Pucca house} \\ 0 \text{ otherwise} \end{cases} ; \quad D_3 = \begin{cases} 1 \text{ for Pucca house} \\ 0 \text{ otherwise} \end{cases}$$

The justification of the explanatory variables in the study is given as following:

Age of the Respondent: Women's age is an important factor that affects BMI. A greater proportion of mothers age 15-19 and 40-49 that exhibit chronic energy deficiencies (CED) (Girma and Genebo, 2002). A local study in Ethiopia also shows that women in the youngest age group (15-19) and women in the oldest age group (45-49) is the most affected by under nutrition (Teller and Yimar, 2000). As age, increases the health status is expected to improve (Ramachandran et. al. 2006 and Girma 2007).

Educational Level of Women: Women who receive even a minimal education are generally more aware than those who have no education of how to utilize available

resources for the improvement of their own nutritional status and that of their families. Education may enable women to make independent decisions, to be accepted by other household members, and to have greater access to household resources that are important to nutritional status (ACC/SCN, 1990). A comparative study on maternal malnutrition among ten sub-Saharan African countries (Loaiza, 1997) and a study in the Southern Nations, Nationalities and Peoples' Region of Ethiopia (Teller and Yimar, 2000) shows that the higher the level of education, the lower the proportion of undernourished women.

Household Size: Household size is an important determinant of BMI. In our Indian society women are in general, last to eat from whatever is left after feeding the family, which results low BMI or in other words malnutrition.

Food Expenditure: Food expenditure is another important determining factor of BMI. It is generally expected that women enjoy normal BMI if the family invest more on food consumption. However, more food expenditure may sometimes create obesity or overweight problem.

Medical Expenditure: Medical expenditure of the family is another important determinant of the BMI of the respondent. Family who spend more for the medical purposes may be more aware regarding their nutritional status or in other words health status which in turn leads to normal range of BMI.

Age at Marriage: Marital age is another important determinant of BMI. It is expected that women who are getting married at a very younger age and being pregnant at less than 18 years may have a negative impact on their BMI status. However marital age may not have any significant impact on the BMI status of old aged women.

Area of House: Area of house is another important determinant of BMI status of women. Larger area of house may have both positive and negative impact on BMI status. Positive impact in the sense that more area of house reflects better standard of living which in turn leads to normal BMI. On the other hand, women have to devote more time for maintenance of these larger area which may leads them to devote less time for their health purposes that in turn leads to low BMI.

Housing Condition: Housing condition is another important determinant of BMI. Better housing condition implies more income of the family, which in turn implies more food expenditure, or in other words normal range of BMI status. Access and use of improved housing condition is expected to improve nutrition status (Tahrakan and Suchindran, 1999; Girma, 2007).

To analyze the third objective both secondary and primary information regarding the health infrastructure and health care facilities are used. To check the availability and accessibility of the health facilities in the health centres, a tabular representation is done by using primary information collected from the respondent women.

To analyze the fourth objective, the percentage of women who has taken traditional preventive care is observed from the reported diseased women in a particular disease. Again, the percentage of women who takes different traditional preventive measures for different disease and even for the same disease are also calculated by the number of women who takes specific traditional preventive measures for the specified disease dividing by the total reported diseased women who are taking traditional preventive cares for these diseases.

To examine the determinant of the demand for health care facilities of the women for which binomial logit model is used in the study through contingent valuation technique. The primary use of contingent valuation method is to elicit the women's willingness to pay for getting health care facilities. This approach has been used to check whether they are interested to pay or not. The response option will be binary type i.e.; 1 for yes and 0 for no. If the response is in favor of yes then that implies there is a demand for getting better health facilities or the people agree to share the cost for its maintenance. For estimating the probability of willingness to pay (WTP), binomial logit model can be specified by the following equation.

$$P\{WTP = 1\, for\, yes, 0\, otherwise\} = \frac{1}{1 + e^{-\left(\alpha + \sum_{i=1}^{k} \beta_i X_i\right)}} \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$$L_i = \alpha + \sum_{i=1}^{k} \beta_i X_i + u_i \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

$$L_i = \alpha + \beta_1(AGE) + \beta_2(BMI) + \beta_3(RE) + \beta_4(HE) + \beta_5(HS) + \beta_6(PCME) + \beta_7(PCY) + \beta_8(DS) + \beta_9(AH) + \theta_2 D_2 + \theta_3 D_3 + U_i \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where; Li = log (Pi / 1—Pi) and (Pi / 1—Pi) is the odd ratio. Pi is the probability for that women who are willing to pay something and (1—Pi) is the probability of that people who are not willing to pay. u_i is the random error.

Where; Xi's are the explanatory variables. For the logit model, some quantitative variable and some qualitative explanatory variables have to be considered. These quantitative explanatory variables are:

AGE= Age of the respondents in years at the time of survey.

BMI=Body Mass Index of the respondent.

RE= Education level completed by the respondent in years at the time of survey.

HE= Education level completed by the respondent's husband in years at the time of survey.

HS= Household size of the respondent.

PCME= Per capita monthly medical expenditure of the family.

PCY= Per capita monthly income of the family

DS= Distance of the health centre from the respondent home.

AH= Area of house.

HC= Housing condition (which is taken as a dummy)

$$D_2 = \begin{cases} 1 \text{ for Semi Pucca house} \\ 0 \text{ otherwise} \end{cases} ; \quad D_3 = \begin{cases} 1 \text{ for Pucca house} \\ 0 \text{ otherwise} \end{cases}$$

The demand for health care model cannot be estimated by using standard regression techniques due to the dichotomous nature of the dependent variable. In that case, logistic regression technique is used to estimate the determinants of the demand for health care. Logistic regression explains the relation between dependent qualitative variable and one or more qualitative and quantitative explanatory variables. Logistic regression model cannot be estimated by standard ordinary least squares (OLS) method because the logistic regression model suffers from heteroscedasticity and non-normality

problem in the error term (Sankar and Kathuria 2004). In that case, maximum likelihood method is used to estimate the parameters of logistic regression model.

Justification of the Variables

The justifications of the explanatory variables are as follows:

Age of the Respondent: Age is an important factor for explaining the demand for health care. It is expected that the family with more aged person tend to consume large amount of health care as aged people are suffering more than others.

BMI: Body Mass Index is an important indicator of health status and therefore it is a crucial explanatory variable for demand for health care. The people have poor health status (either lower value of BMI or higher value of BMI) face major health problems and therefore it may have positive impact on the demand for health care facilities.

Education: Education can also enhance the demand for health care by several ways that is awareness, knowledge of health care and motivation. In this study, education is measured by the level of schooling of an individual.

Household Size: The household size is an important determinant of the demand for health care. Willingness to pay for getting health care facilities is more if the family size or the number of beneficiaries is larger.

Medical Expenditure: Medical expenditure is an important indicator of demand for health care. Family with more medical expenditure may be willing to getting health care facilities. This variable has also negative impact on the demand for health care facilities. If the medical expenditure increases due to severe problem of the patients belonging to

richer class then there may a negative impact on the demand because they are able to get better treatment from private health centres.

Income: Income is an important determinant of the demand for health care. Income influences the demand for health care. High-income individuals seek more formal health care and prefer private facilities because they can afford it. Income is measured by monthly income of a household.

Distance (in km.): Distance of the health centre from their home is one of the crucial determining factors of the demand for health care of the women. Generally, if the health centre is far away from their house people are willing to pay more in order to get early treatment of the patient.

Area of House (in sq. feet): Larger area of house implies better hygienic condition in the house. Degree of illness depends on the hygienic condition of the house. Degree of illness may be lower due to better hygienic condition. Larger area of house as well as better hygienic condition in the house is required for maintaining healthy living that leads to lower health problem and people are not willing to pay more (Das and Das, 2012). However, it may have positive impact when area of house is proxied by the wealth status of the family and in that case, people have to pay more due to their higher ability to pay.

Housing Condition: Housing condition is an important determinant of demand for health care. Housing facilities are of three types viz pucca, semi-pucca and kaccha. Pucca and semi-pucca housing provide better hygienic condition than kaccha housing. However, the availability of pucca, semi-pucca and kaccha housing depends on the economic status of the family. Generally, poor families have kaccha house that leads to a negative impact on their willingness to pay.

Theoretically, both these quantitative as well as qualitative explanatory variables have an influence on the demand for rural health care but empirically it should be examined whether they have any significant impact on the demand for health care in this study area.