Introduction:
The fundamental truth that human well-being is revolving round the fulcrum of health is receiving increasing acceptance in the world scenario. This fact can be perceived if one cares to look into the allocations made in the annual budget of every country in the world where in the highest priority is being given to the promotion of health. It is a most vital issue, so comprehensive and multi-dimensional that it should be tackled at different levels, ranging from the tiny hamlet to the broad spectrum of nation.

India’s Primary Health Care system is based on the Primary Health Center (PHC) which constitutes the corner stone of the rural health care and is targeted to cover a population of approximately 25,000 and each center is equipped with provision for preventive, curative, promotional and rehabilitative aspects of public health and has an effective referral system. The center forms a platform for the first level of contact and a link between individuals and the national health system for bringing health care delivery at the door steps of the community. Under each PHC 5-6 sub-center function which cover 3-4 villages with an aggregate population of around 5000 and are operated by an Auxiliary Nurse Midwife (ANM). These facilities are a part of the three-tier healthcare system. The PHCs act as referral centers for the Community Health Centers (CHCs) with 30-bedded hospitals and higher order public hospitals at the taluk and district levels respectively.

Statement of the problem:
Primary health centers in India are beset with problems such as the shortage of multi-disciplinary medical expertise, laboratory facilities and lack of other infrastructure facilities and the dearth of life saving medicines. The medical personnel, as a rule are disinclined to practice in rural areas or remote locations and prefer urban areas on for monetary achievement and better life conveniences. Consequently in many remote rural villages qualified doctors are not available for consultation. In 1996, out of 29,699 doctor’s posts sanctioned, 4281 remained unfilled in rural health Institutions (Misra in et al 2003). Researcher’s twelve years of service in public health arena abounds in heart renting experiences relating to the pitiable condition of the village
folk in many parts of the India, even in many the field of public health areas of Kerala which is acclaimed to be one of the most developed and highly literate states in India. The Primary Health Care facility is scarcely available to the masses as most of the health care centers either remain closed or serve no purpose owing to the absence of doctors. The problem of pervasive absenteeism of doctors and even health workers are indeed formidable as several previous studies also have pointed. The researcher has been deeply moved by this unholy state of affairs in the vital nerve centers of the country and becoming of a responsible citizen made a firm resolve to probe issues connected with the structure, objective and function of PHCs. The study was conducted at Kerala; a more advanced state, which has set an example for the rest of India and third world countries by providing Primary Health Care, but now groping in the dark and unable to find solutions to many of its emerging health problems. The main reason behind which is the low utilization of Primary Health Care in Kerala due to lack of essential facilities. The state has failed to ensure such cardinal conditions such as availability, acceptability, accessibility and affordability of primary health care services to its entire people. So the people are deprived of the benefits in the Primary Health Care services in the public sector and go seeking medical care from the private sector which is extremely expensive in Kerala. The state faces epidemics all the year round. Sixty to Seventy per cent of the poor people are forced to seek medical helps in private sector. This precarious condition is created largely by the irresponsibility and lack of proper planning on the part of the government. The net result of this negligence is suffering, acquiring from the ill health and poverty which impede development (Sunil D. Santha 2008).

**Rationale of the study:**

Low quality Primary Health Care is one of the burning issues in Kerala and a detailed study on the various aspects of the delivery of primary health care system in the state is considered to be imperative. So this Research Study proposes to focus on the evaluation of the “Efficacy of Primary Health Centers in Kerala with special reference to Ernakulam District”, with the objective of bringing out the truth for the benefits of
convincing the public and the policy makers about the need for overhauling of the entire system of primary health care.

Objectives:

- To ascertain the overall Health Care Delivery Mechanism in the targeted Primary Health centers (PHC) including OT, IP and OP facilities therein.
- To ascertain the existing Basic Infrastructural Facilities of the PHCs in the selected area and identify the deficiencies if any.
- To ascertain overall impact of Primary Health Care services rendered in the District through the PHCs.
- To offer suggestions for improving the existing Health Care System in the district.

Definition of Major concepts:

Efficacy

Theoretical concepts: The extent to which a specific intervention, procedure, regime or services produces beneficial effects under ideal conditions.

Operational concept: the extent of man power, infrastructure and organization set up to produce beneficial effects.

Quality of Services

Theoretical concept: It is the extent to which a program has achieved the set objectives and targets.

Operational concept: In this study quality of services means how much the services of PHCs attained achievements compared to the targets fixed for each year.

Impact

Theoretical concept: Measure the effect of a program, services or health status.

Operational concept: The reactions of beneficiaries regarding the programme or services.

Hypotheses to be tested are:

- There is no significant association between sex and levels of satisfaction of beneficiaries regarding the various aspects of health care delivery system.
- There is no significant association between age and levels of satisfaction of beneficiaries regarding the various aspects of health care delivery system.
- There is no significant association between education status and levels of satisfaction of beneficiaries regarding the various aspects of health care delivery system.
- There is no significant association between marital status and levels of satisfaction of beneficiaries regarding the various aspects of health care delivery system.
- There is no significant association between economic status and levels of satisfaction of beneficiaries regarding the various aspects of health care delivery system.

Research design:
The Survey technique was adopted for the study.

Setting of the study:
In Kerala state, there is not much difference across its districts wise in the health care delivery system even though Kerala presents a better picture when a nation wide survey is made. The researcher has selected Ernakulam district as study area because it is unique with diversity in geography, history and demography, abounding in hills, plains and backwaters and inhabited by people of all races and religious. It is one of the fourteen districts of Kerala, occupying a central position which is surrounded by the Arabian Sea in the West, Thrissur District in the North, Idukki and Kottayam Districts in the East and Alappuzha and Kottayam Districts in the South. Its location is 9° 57' North and 76° 15' East. There are seven Taluks in Ernakulam District, viz., Paravur, Aluva, Kochi, Kanayannoor, Muvattupuzha, Kunnathunadu and Kothamangalam. Twenty health centers, either in the name of Block Primary Health Centers (BPHC) or Community Health Centers, (CHC) function in these seven taluks. Under these centres (CHC/BPHC) 68 Primary Health Centers (PHCs) function in the study area (Ernakulam district) and 5 to 6 sub centers are attached to each PHC.
Population:
Sixty eight Primary Health Centres and their beneficiaries in the revenue district of Ernakulam, constitute the population for the study.

Sample of the study:
The unit of study constitutes of the Primary Health Centres that function at the district and their beneficiary who had attended the Out Patient service of that respected PHC.

Sample selection:
Primary Health Centre and their beneficiaries were selected from the above mentioned population. Multi-stage random sampling technique was chosen for the study. In the selection of Primary Health Centres 10% of the total PHCs in the study area were selected for the study.

From the Seven Taluks, Three Taluks were selected for the study by using simple random sampling method (Kothamangalam-2, Paravoor-3 and Muvathupuzha-3) at the first stage of multi-stage sampling method. Again from these three taluks comprised of eight health centres either as Community Health Centres or Primary Health Centres [2 Community Health Centres (CHCs) and 6 Block Primary Health Centres (BPHCs)], four health centres (one CHC and three BPHCs) were selected at the second stage by applying simple random sampling method. The selected four health centres (one CHC and three BPHC) have 21 PHCs. At the third stage of sampling, seven PHCs were selected by using simple random sampling from these 21 PHCs.

In the sample size calculation of beneficiaries’ the researcher applied the formula $4pq/L^2$. ($p$=prevalence, $q= 1 - p$ and $L= Allowable$ error). For calculating the prevalence, the number of beneficiaries who had attended the Out Patient unit of each Primary Health Centre for the last six months divided by the total population of respected PHC. And also gave allowance for 2 % error calculated by taking $L=2 \%$ of ‘P’. The sample size is approximately 10% of the population. Total sample size is
allocated proportionally to the different sample PHCs. As per this, a total of 2481 beneficiaries were selected for the study from the 7 selected PHCs.

**Tools and Techniques of data collection:**

**Primary data:**

First instrument was a standardized questionnaire of Indian Public Health Standards for Primary Health Centers in India for collecting the data on deficiencies of health care delivery mechanism, infrastructure facilities, manpower and services provided through the Primary Health center and the same was got filled in by the Doctors, Paramedical staff and field staff of the sample PHCs in the study area. The second one was an interview schedule consisting of two parts. The first part of the interview schedule includes questions related to socio-demographic characteristics and second part covers questions suitable for collecting the level of satisfaction of the beneficiaries with health care delivery mechanism by using the Likerts summated three point scale.

**Secondary data:**

Secondary data of the study were collected from Governmental reports, Website visits, Journals and magazines and studies conducted by other researchers on the same or related topics.

**Pilot Study:**

Fourteen beneficiaries were selected (two from each selected PHCs) for pilot study to test the face validity of the interview schedule, regarding the levels of satisfaction of beneficiaries with the various aspects of health care delivery at the primary health centre.

**Actual data Collection:**

Data were collected from the study population within duration of 6 months.

**Analysis and Discussions:**

The Data collected were systematically analyzed using logical and statistical methods for arriving at derivation. The findings were analyzed and have been written in six
chapters such as introduction, review of literature, research methodology, result, discussion and conclusions and suggestions.

**Statistical tests used:**

The socio-demographic variables among themselves and with the levels of satisfaction of beneficiaries towards services provided at the Primary Health Centers, manpower, infrastructure and behavioral pattern of staff and doctors of the PHCs towards beneficiaries were statistically tested to know whether they are significant or not. To test the socio-demographic variables themselves for finding out the association, Chi-square Test was ($X^2$) applied. To find out the statistical difference between selected socio-demographical variables and levels of satisfaction of beneficiaries with the health care delivery at the primary health centers also Chi-square independence test applied.

**Main findings:**

- In the study area there is no uniformity in the distribution of Primary Health Centers and Sub centres compared to national schedule.
- 42.85% of PHCs only provide medical care for at least 40 beneficiaries per day as recommended by Indian Public Health Standards (IPHS).
- 14.28% of PHCs only have 24 hour emergency, Inpatient services.
- None of the PHC in the study area has referral services with adequate facilities.
- PHCs in the study area were limited in their Ante Natal Care (ANC) services to registration of pregnant women, distribution of iron and folic acid tablets and blatantly denying other essential Anti Natal Care services including laboratory facilities.
- Intra Natal Care (INC) facilities were not available at any of the selected PHCs due to the lack of Operation Theater and Labour room facilities and adequate qualified staff.
- Post Natal Care (PNC) facilities were not available at the selected PHCs in the study area aggravating the likelihood of infant and child mortality in the respective villages.
• Family planning services at the PHCs in the study area are restricted to only the temporary methods such as provision for condom distribution, oral pills and Intra Utrine Devices (IUD) for insertion and there is no provision for permanent Family Planning methods such as Tubectomy and Vasectomy.
• Sterilization services were not available at any of the PHCs under the study.
• There is no uniformity in the Manpower provision such as Medical Officers, Paramedical staff and Field workers and is erratic in various PHCs and Sub Centres.
• 71.42% of PHCs have only one doctor while IPHS recommends two doctors including one lady doctor and one AYUSH doctor. In 57.14% of PHCS, the existing medical officer is lady a doctor.
• 28.14% of PHCs have nursing staff as per IPHS.
• 85.71% of PHCs only have male and female health inspectors.
• 14.28% of PHCs only have lab facility and the post of lab technician
• None of the PHC has the post of health educator which is a grave deficiency for enlightening the masses on community health and preventive measures and other significant aspects of health care.
• 57.14% of sub centers only have the male and female health workers.
• Only 14.28% of PHCs (Kuttampuzha PHC) have vehicle and driver for field work.
• None of the PHCs have vehicle (ambulance) service for referral service for patients.
• 40.6% of the total beneficiaries were males and 59.6% were females.
• 16.9% of beneficiaries were in the age group of up to 25yrs, 67.1% were between 25 to 50 yrs and 16.1% of beneficiaries were 50 yrs and above. In the educational status, 5.2% had primary level of education, 10.5% had upper primary level, 25.9% of high school standard, 54.8% of higher secondary level of education and 3.6% had graduation and above. 19.8% of beneficiaries were unmarried while 80.2% were married and 79.6% were below Poverty Line and 20.4% were Above Poverty Line.
Age group has significant association between sex (p<.003), education status (p=.000), marital status (p<0.000) and economic status (p=.011) of beneficiaries. The male beneficiaries were 40.6% and female beneficiaries were 59.6%. Sex group has association with education status p=.000, marital status and economic status p=.000. Marital status of beneficiaries was divided into two categories as married and unmarried. The economic status of the beneficiaries was categorized in to Below Poverty Line and Above Poverty Line. The marital has significant association with economic status p=.000. All the socio-demographic variables have association among themselves while applying the Chi-Square test. The significant association between age group and sex interpret the fact that majority of beneficiaries (67.1%) are in the 25yrs to 50 yrs of age and female beneficiaries may be high in this age group as majority of the beneficiaries are (59.6%) female compared to males.

Age group has significant association with levels of satisfaction of referral services (p=.015), Anti-natal Care services (p=.000), Immunization programme (p=.002), Control of Reproductive Tract Infections (p=.004), Disease Surveillance and Control of epidemics (p=.012), Availability of manpower (p=.048), Building of PHC (p=.009), Availability of medicine (p=.036).

Sex has significant association with levels of satisfaction of Out Patients (p=.001), Referral Services (p=.011), Anti-natal Care Services (p=.003), Family planning (p=.009), Child Care and Immunization Programme (p=.013), Control of Reproductive Tract Infections (p=.000), Health Education Programme (p=.033), Prevention and Control of Endemic Diseases (p=.004), Disease Surveillance and Control of Epidemics (p=.048), Location of PHC (p=.000), Waiting area (p=.000) and Availability of medicine (p=.001).

Education status has significant association with levels of satisfaction about Out Patient Services (p=.000), Emergency service (p=.000), Referral services (p=.000), Family Planning (p=.001), Child Care and Immunization (p=.000), School Health Programme (p=.003), Control of Reproductive Tract Infections (p=.000), Nutrition programme (p=.000), Health Education Programme (p=.000), National Health Programmes (p=.000), Diseases Surveillance and
Control of Epidemics ($p= .000$), Location of PHC ($p= .000$), Building of PHC ($p= .005$), Waiting area ($p=.000$), Availability of Medicine ($p= .000$), Doctor’s examination of patients ($p= .000$) and Attitude of Health Workers towards patients $p=0.000$.

- Marital status has significant association with levels of satisfaction about Out Patient service ($p= .000$), Referral services ($p=0.000$), Ante-natal Care Services ($p= .026$), School Health Program ($p=0.000$), Control of Reproductive Tract Infections ($p=0.000$), Nutrition Services ($p= .000$), Prevention and Control of Endemic Diseases ($p=0.000$), National Health Programmes ($p=0.000$), Safe Water Supply and Basic sanitation ($p=0.003$), Location of PHC ($p=0.000$), Building ($p=0.037$), Waiting area ($p=0.000$), Availability of Medicine ($p=0.026$) and Attitude of Health Workers ($p=0.047$).

- Economic status of the beneficiaries has significant association with levels of satisfaction about Out Patient Services ($p= .001$), Referral services ($p=0.015$), Ante natal Care Services ($p= .008$), Family Planning ($p=0.001$), Child Care and immunization ($p= .019$), School Health Program ($p=0.000$), Control of Reproductive Tract Infections ($p=0.000$), Health Education Programme ($p= .030$), Prevention and Control of Endemic Diseases ($p=0.000$), National Health Program ($p=0.036$), Diseases Surveillance and Control of Epidemics ($p=0.023$), Location of PHC ($p=0.000$), Waiting area ($p=0.000$), Availability of medicines ($p=0.000$), Doctors examination of patients ($p=0.026$) and Attitude of health workers ($p=0.000$).

**Conclusion**

The long-term goal of the Indian government and international funding agencies has been to provide health care to rural communities through PHCs. However, even with such huge funding, these centers have not been successful enough to deliver the goods, owing to a variety of reasons that include dearth of facilities, of equipment for performing even simple laboratory tests. Therefore adequate steps are to be initiated to reinforce the existing Primary Health Centers which are found to be not maintaining the expected standard of health care and nudge rural folks to a healthy and vibrant living.