Health Care Utilization In Relation to Socio-Economic Status in Rural and Urban Areas of Andhra Pradesh

THESIS

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CERTIFICATE

This is to certify that the thesis entitled **"Health Care Utilization in Relation to Socio- Economic Status in Rural and Urban Areas of Andhra Pradesh"** and submitted by **Prof. (Dr.) I. Bhaskara Raju, I.D. No. 2007PHXF024P** for award of Ph.D., Degree of the Institute, embodies original work done by him under my supervision.

Date: 31st December, 2014. _____

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I am extremely thankful to the Examiners who suggested changes and re-submit the Thesis. Changes are made - 1. Grammatical mistakes are corrected 2. More recent References are included 3. Executive Summary is included 4. In the Material and Methods sub-headings like Type of study, Inclusion and exclusion criteria, Sampling Tecnique and size, Data collection tools and Data Analysis.

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Prof. (Dr.) I. Bhaskara Raju

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Objectives:

1. To analyse healthcare utilization in relation to socio-economic status and geographical location (rural, urban,) of population.
2. To analyse the healthcare utilization based on the Health Insurance Status of population.

Type of Study: Longitudinal, Descriptive.

Sampling Technique and Size: The study was conducted in 3 parts. The FIRST PART of the study was conducted in both Rural and Urban areas in two stages, both before (2007) and after the Social Health Insurance – Rajiv Aarogyasri was introduced in the State of Andhra Pradesh (2010). 750 Households (250 Upper, 250 Middle and 250 Lower Social Status) were interviewed using a pre-designed and pre-tested questionnaire. The households were selected based on Systematic Random Sampling Method. The households were classified based on Modified B G Prasad's Classification (December, 2004) monthly income from Rs. 5,000/- to Rs. 10,000/- in a household was considered as Upper Class, monthly income from Rs. 1,500/- to Rs. 5,000/- in a household was considered as Middle Class and monthly income below Rs. 1,500/- in a household was considered as Lower Class. The same households were interviewed twice once in 2007 and again in 2010. The survey was repeated in Secunderabad (Urban), 750 households (250 Upper, 250 Middle and 250 Lower) in 2007 and the same households were repeated in 2010.

The SECOND PART of the study was Hospital Analysis of Surgeries conducted in a Government Hospital and in a Private Corporate Hospital in 2007 and 2010.

The THIRD PART of the study was Analysis of a Single Surgical Procedure, Appendicectomy in both Government Hospital and Private Corporate Hospital in the year 2007 and 2010.

Data Collections Tools: Pre-designed and Pre-tested questionnaire was used to interview the members of the households.

Data Analysis: SPSS Version 10.0 was used for Data Analysis.

Results:

There was significant difference in the Healthcare Utilization across Socio-Economic Classes ($p<0.001$, Chi Square (X^2) = 265.3). Health Care (Family Planning, Immunization, Antenantal Care, Intrapartum Care and Detection of Chronic Diseases) significantly reduced in 2010 survey compared to 2007 survey, both in Rural and Urban Areas. Family Planning by Government providers reduced by 47%, Immunization reduced by 86%, Antenantal Care by 32%, Intrapartum Care by 72% and Detection of Chronic Diseases by 43%. On the other side the survey in 2010 found excess Surgical Interventions. Hysterectomy (removal of Female Reproductive Organ = Uterus) increased by 154%, Appendicectomy (removal of Appendix) and repair for Incisional Hernia increased many fold.

In the Hospital Analysis of Surgeries conducted in 2007 and 2010 it is found that the surgeries not covered by Health Insurance showed a decline of 16% (-16%), while surgeries covered by Health Insurance showed a increase of 257% in Government Hospital, while the Private Corporate Hospital analysis showed a jump of 250% for surgeries not covered by Health Insurance and a jump of 779% for surgeries covered by Health Insurance.

In Analysis of Single Surgical Procedure, Appendicectomy, the Government Hospital Analysis showed the surgery was performed in 14% of patients without disease in 2007, while 32% of patients without disease were operated in 2010. The Private Corporate Hospital Analysis showed the surgery was performed in 48% of patients without disease in 2007, while 92% of patients without disease were operated in 2010. Post Insurance the proportionate increase in Appendicectomy for patients without diseases was 130% in Govt. Hospital and 92% in Private Corporate Hospital.

Discussion:

Our findings correlated with the findings of RAND study (Research and Development). Wagstaff & Lindelow (2008) [58] reported that insurance appears to encourage people to seek more care from the expensive tertiary care providers, Wagstaff, et. al (2009)[59], showed both outpatient and inpatient expenses of the households seems to have gone up considerably post-insurance. Our findings of "Hospital Analysis of surgeries" showed abnormal increase of surgeries covered by Health Insurance, while our analysis of Appendicectomy showed Insurance made providers do more needless surgeries, similar to the findings of Duggal R (2011) [71] who concluded that health insurance in an unregulated environment can also lead to unethical practices, further victimising the patient. Further, publicly financed healthcare which operates in an environment regulating both public and private healthcare provisioning was the only way to assure to ethical and equitable healthcare to people.

Our findings were similar to those of Dutta M, Husain Z. (2013) [72] who concluded that health insurance was unable to eliminate the inequities in accessing healthcare services that stem from disparities in SES. In fact, Insurance aggravates inequity in the healthcare market. The study was based on unit-level data from the 2005-06 Morbidity and Health Care Survey undertaken by National Sample Survey Organization.

Our findings showed that lower socio-economic status households had not benefited much from Health Insurance in terms of healthcare delivery like Immunization, Family Planning, Detection of Chronic Diseases and these findings correlate with those of Fan VY, Karan A, Mahal A. (2012) [73] who concluded that Aarogyasri was not benefiting scheduled caste and scheduled tribe households as much as the rest of the population.

Our findings that the primary care is less utilized post-insurance and tertiary care is over-consumed is similar to that of the study by Sunita Reddy, Immaculate Mary (2013) [75] who

concluded that the analysis of the annual budget spent on the surgeries in private hospitals compared to tertiary public hospitals shows that the current scheme was not sustainable and pose huge burden on the state exchequers. The private hospital association <<SQ>> s in AP, further acts as pressure groups to increase the budget or threaten to withdraw services. Thus, profits are privatized and losses are socialized.

Conclusions:

1. In 2007 survey it was found that the Households, especially those belonging to lower socio-economic status used to avail the services of primary health care services like temporary Family Planning Needs, Antenatal Care, Intrapartum Care, Terminal Methods of Family Planning (Tubectomy/Vasectomy), Immuization, Detection of Chronic Diseases etc. But in 2010 survey it was found that less number of Households were utilising the primary healthcare services. It was concluded that the primary health sector was neglected and less utilized after the introduction of Health Insurance.
2. In 2007 survey it was found that less number of Households underwent surgical procedures, while in 2010 survey it was found that many surgeries like Hysterectomy (removal of Female Reproductive Organ = Uterus) increased by 154%, Appendicectomy (removal of Appendix) and repair for Incisional Hernia increased many fold. It was concluded that more operations were conducted after the Health Insurance was introduced since the surgeries mentioned above were covered in the Insurance scheme.
3. In the Hospital Analysis of Surgeries conducted in 2010, surgeries covered by Health Insurance showed an increase of 257% in Government Hospital, while the Private Corporate Hospital analysis a jump of 779%. It was concluded that there was many fold increase of surgical procedures after the insurance cover.

4. In Analysis of Single Surgical Procedure, Appendicectomy in 2010, the Government Hospital Analysis showed the surgery was performed in 32% of patients without disease, while in Private Corporate Hospital 92% of patients without disease were operated. It was concluded that needless surgeries are performed because of the Health Insurance cover leading to moral turpitude.

Recommendations:

1. Primary Health Care should not be neglected.
2. The package amount in Rajiv Aarogyasri was abnormally high for surgical procedures compared to other social insurance schemes in India leading to moral turpitude and hence the package amount may be reduced and should be similar to those of the other schemes like Central Government Health Scheme (CGHS), Employee State Insurance Scheme (ESIS),Yeshasvini Health Insurance and Rashtriya Swasthya Bima Yojana (RSBY).
3. Stringent Regulation – To avoid malpractices, corruption and fraud stringent regulation is required. Health Insurance Scheme was spending a well over Rs. 1,200 Crores mostly to the surgical packages. Our study has concluded after analysing one surgical procedure that the Government Hospital had operated 32% of non-cases while the Private Hospital had operated 92% of non-cases. The surgically removed specimens/organs may be cross checked by a different pathology lab or the insurance schemes own pathology lab. By spending a few Lacs of Rupees on cross checking Hundreds of Crores from false claims can be saved.
4. Modify the Present Medical Insurance to cover Primary Care and Secondary Care – The present scheme was spending mostly on costly Private Tertiary Care it should be modified to cover the cost effective Primary and Secondary level intervention.

Chapter 1 : Introduction

Health is defined as a "State of complete physical, mental, and social well being" (World Health Organization).

Health Care: Many people mistakenly believe 'Health Care' and 'Medical Care' are synonymous. Health Care is both Preventive Care and Curative Care where as Medical Care is purely Curative in nature. Health Care is defined as "Multitude of services rendered to individuals, families or communities by the agents of the health services or professions, for the purpose of promoting, maintaining, monitoring or restoring health. The term "Medical Care" refers chiefly to those personal services that are provided directly by physicians or rendered as a result of the Physician's instruction.

Health Care Delivery consists of Inputs, i.e., the lower health status, with the help of resources, will be converted to Output i.e., the changed health status or improved health status which is expressed in terms lives saved, deaths averted, diseases prevented, cases treated, expectation of life prolonged etc. Resources mean Health Manpower, Money and Material.

Health Care Delivery System is intended to deliver the health services. In India it is represented by four major sectors or agencies. The *Public Health Sector* includes Primary Health Centers, Community Health Centers, District Hospitals, Teaching Hospitals, Specialist Hospitals, etc. The *Private Sector* includes Private Hospitals [for-profit and not-for-profit(NGO)], Nursing Homes, Clinics etc., the Indigenous system of medicine includes Ayurveda, Unani, Siddha and Homoeopathy. The *Voluntary Health* Agencies in India includes Indian Red Cross Society, Indian Medical Association, Indian Dental Association, Tuberculosis Association of India, etc. The *National Health Programmes* for Eradication of Communicable Diseases, Control of Population, Rural Health, etc.

Aim of Health Care Services is to improve the health status of population. Health services should be comprehensive, accessible, acceptable, provide scope for community participation and available at an affordable cost.

Health Status Indicators Infant Mortality, Life Expectancy in men and women are widely used Health Status Indicators and hence they are used in our research as a measure of Health Status.

Health Care in Andhra Pradesh is controlled by three separate wings. The First is the Directorate of Health which controls the Primary Health System i.e., the Primary Health Centers in the State. The Second is the APVVP (Andhra Pradesh Vydya Vidhana Parishad) that controls the Secondary Hospitals i.e. the Taluk Hospitals and District Hospitals. The Third is the Directorate of Medical Education that controls the Medical Collages and Tertiary Hospitals in the State. During the course of our study, specially after the introduction of Social Health Insurance in Andhra Pradesh, more Health Budget is diverted to the Directorate of Health Medical Education i.e. the Tertiary Hospitals and Private Corporate Hospitals from Rs. 10 Crores in the year 2007 to Rs. 120 Crores in the year 2010, a sharp and phenomenal increase in just four years of our research. But during the same years the Health Budget allocation to the Directorate of Health i.e. the Primary Health Centers increased from Rs. 55 Crores to 60 Crores which is negligible. The Health Budget allocation to the Commissionerate of Health which controls the Secondary Care Hospitals in the State did not show any significant increase from the year 2007-2010.

There are three levels of Technology in Medicine - Non Technology, Halfway Technology and High Technology. In Non Technology patients cope with illness that have no known cure. Halfway Technology is cost-increasing and it represents the next level of medical progress were practitioners treat patients by trying to postpone its ill effects. Surgery, radiation treatment and chemotherapy are Halfway Technologies directed at established cancer cells. Organ

transplantation in the case of end-stage disease is also an example of Halfway Technology. Halfway Technologies are usually cost-increasing and are delivered at Tertiary Hospitals only. High Technology becomes available when scientists understand the disease mechanism and develop treatments that either prevent or cure the malady. High Technology is cost-decreasing. It constitutes a shift in attention from the consequences of a disease to its cause. Immunizations and antibiotics for the treatment of bacterial infections are examples of High Technology. It is important to note that the Primary Health Centers deliver the cost-decreasing High Technology and hence they should not be neglected.

Health Insurance National Health Insurance is health insurance that insures national population for the cost of health care and usually is instituted as a program of health reform. In some countries like Australia and UK contributions to the National Health Insurance are made via taxation. The theory of risk and insurance states that individuals enter into insurance contracts to shift the uncertainty of financial risk to others. Health Insurance can lead to Market Failure. In addition to the traditional sources of market failure, the tax subsidy to health insurance provides a strong incentive for over consumption. The Moral Hazard arises when one party to a Health Insurance contract cannot monitor the other party's performance. One or both parties may engage in post-contractual opportunistic behavior because private actions are hidden from view. Patients/Hospitals who are moral in most ways may still take advantage of situations when their behavior cannot be monitored. Insurance increases likelihood of purchasing more medical services and induces higher spending in the event of an illness. A Patient visiting a physician for a battery of diagnostic tests will behave differently if he has insurance coverage. A Physician with a fully insured patient will provide the tests knowing that the insurance company will pay the bill, seldom will cost enter the discussion. Studies by the Research And Development

(RAND) Corporation and others have shown that individuals who receive free care use more medical services than those who are required to pay a portion of the cost. Even if illness is a perfectly random event, the presence of medical insurance will alter the randomness of medical expenditure. The purpose of insurance is to share risk, not wealth. Social insurance can provide adequate insurance for those with pre-existing conditions, whereas Private Insurance cannot. Health Insurance cannot alter Health Status – Evidence from the RAND Health Insurance Experiment suggests that more generous health insurance benefits have little effect on health status, while absence of insurance does not reduce the health status of the average American. There seems to be no relationship between Health Status and Insurance Status. These differences could be due to the fact that up to one third of the care provided to the insured is considered inappropriate or the medical benefit does not exceed the medical risk. The present study has shown an inverse relationship between Health Status and Medical Insurance.

Medical Insurance in India Employee State Insurance Scheme (ESIS) was started in 1952. Central Government Health Scheme (CGHS) was started in 1954. Mediclaim- Voluntary Health Insurance started in 1986. Privatization of health insurance began in the year 1999. Yeshasvini Health Insurance (Karnataka) started in the year 2003. Rajiv Aarogyasri Scheme (RAS) started in Andhra Pradesh in 2007. Rashtriya Swasthya Bima Yojana (RSBY) started in the year 2008, Kalaignar Health Insurance (Tamil Nadu) started in the year 2009. Vajpayee Aarogyasri Scheme (Karnataka) started in the year 2010. RSBY Plus (Himachal Pradesh) started in 2010. Breadth of Insurance Coverage is denoted by the percentage of population covered by the scheme. Depth of coverage relates to the extent of benefit packages offered in the scheme, unfortunately except ESIS and CGHS all other schemes provide only hospitalization cover. The height of coverage indicates the share of health care costs to pre-payment. Insurance lead to high tertiary care

spending and distorted priorities, the overall spending in the country on tertiary care works out to around 37% which is bad. In fact, states like Delhi, AP and TN are spending more than 50% of all government health expenditure on tertiary care which is worst. This is clear pointer to the direction of priorities, where governments have appeared to fall prey to a distorted consumer demand, misguided medical profession and the medico-industrial complex.

Medical Insurance in Andhra Pradesh **(Rajiv Aarogyasri)** Aarogyasri consists of two schemes Aarogysri I and Aarogyasri II. Although Aarogyasri I was started from April 1st 2007 it became fully operational in 2008. The scheme provides financial protection to families living below poverty line upto Rs. 2 lakhs in a year for the treatment of serious ailments requiring hospitalization and surgery. 330 procedures are covered under the scheme. The scheme is being implemented through the Insurance Company, selected through a competitive bidding process. The objective of the scheme is to improve access of Below Poverty Line (BPL) families to quality medical care for treatment of identified diseases involving hospitalization and surgeries through an identified network of health care providers. The scheme provides coverage for the systems like Heart, Lung, Pancreas, Renal diseases, Burns, Cancer treatment and Poly trauma. Below poverty line families are photographed on the Rajiv Aarogyasri Health Card/BPL Ration Card. The transaction is cashless for covered procedures. BPL beneficiary can go to hospital and come out without making any payment to the hospital for the procedures covered under the scheme. *Aarogyasri II* **:** Government have launched with effect from 17th July, 2008, Aarogyasri-II scheme to include a large number of additional surgical and medical conditions to enable many more BPL people who are suffering from acute ailments. Pre-authorization and claim processing for new diseases in Aarogyasri-II is being done by the Trust directly and funded from

the Chief Minister (CM) relief fund. The scheme covers 451 Surgical and 159 Medical Procedures for cash-less treatment.

Material & Methods

1. ***Type of Study*** – It is a longitudinal descriptive study.
2. ***Inclusion and Exclusion criteria*** – *Inclusion criteria* - All Households, not individuals are included in the study. The definition of household in our study is a domestic unit consisting of the family members of a family. *Exclusion criteria* – a). Any house with a single family member living alone and aged above 70 years are not included in the study for the reason they may not give the correct answers for the questionnaire and since they are expected to have less memory power. b). Servants, both male and female and domestic helps who reside in the house are not included as household members. c). Relatives who are present in the household at the time of the interview are excluded from the study.
3. ***Socio-Economic Classification*** Generally Pareekh Classification is used for calculating Socio-Economic Status in Rural Areas. Here nine characteristics are taken into account namely Caste, Occupation of family head, Education of family head, level of social participation of family head, Land holding, Housing, Farm power, Material possessions and Type of family. Generally Kuppuswami Scale is also widely used to measure the socio-economic status of an individual in Urban Community based on three variables namely Education, Occupation and Income. Since both the above classifications are based on multiple factors it became difficult to illicit complete responses from different Households, Modified B G Prasad's Classification (December, 2004) is used in our present work for both Rural and Urban Areas. Monthly Income from Rs. 5,000/- to 10,000/- in a Household is considered as Upper Class. Monthly Income from Rs.1,500/- to 5,000/- in a Household is

considered as Middle Class. Monthly Income below Rs. 1,500/- is considered as Lower Class.

4. ***Sampling Technique and size*** - The Study is conducted in three parts. The **First Part** is a cross sectional study conducted in both Rural Areas and Urban Areas of Andhra Pradesh. The study is conducted two times on the same population, one in year 2007 and the second after Social Health Insurance is introduced in 2010. Interview is conducted in 10 big villages of Medak and Mahaboob Nagar Districts of Andhra Pradesh, five from each District. All ten villages are within 100 kms, radius from Hyderabad City. Each village has a population of around 4000 to 5000, having a mix of high, middle and lower status Households. All the Households in each village are classified into three groups - Upper, Middle and Lower Status Households. From each of these three groups 25 Households were randomly selected for the study. So, from each village 75 Households were involved in the study. Since the survey covered ten villages in the two Districts, total Rural Households studied are 750. In each Household 17 questions were asked and findings were analyzed. A Second survey on the same Rural Population involving the same 750 Households was repeated in the year 2010 to analyze the Health Care Utilization after Social Health Insurance is introduced in Andhra Pradesh. The same exercise is repeated in Urban Area (Secunderabad) covering 250 Upper, 250 Middle and 250 Lower Status Households, totally 750 Households in the year 2007 and also in the year 2010. So, the total Households involved in both the Rural and Urban Areas are 1500 in the year 2007& 2010. The **Second Part** of the study is Hospital Analysis to study the Surgical Interventions in a Government Hospital and in a Private Corporate Hospital, before and after the Medical Insurance. The second part of the study will help us to know whether Utilization of Health Care increased after the Insurance. Surgical Interventions in

Government Hospital in the year 2007 are analyzed and compared with the Surgical Interventions in the year 2010, post insurance. Surgical Interventions in a Private Corporate Hospital in Secunderabad in the year 2007 are analyzed and compared with the Surgical Interventions in the year 2010, post insurance. The **Third Part** of the study is Appendicectomy Analysis. Appendicectomy is one of the most commonly performed Surgeries. This study is undertaken to find out whether Insurance increases excess Medical Care Utilization by different providers – Government and Private. Surgeries under taken for Appendicitis in a Government Hospital in Hyderabad during the months of August, September and October 2007 are studied retrospectively. The Pathology Reports of the first 25 Appendicectomy specimens are collected for conformation of diagnosis retrospectively. There could be some bias since Pathology Reports of same hospital is analysed. After RAS is introduced the first 25 Appendicectomy specimens of August, September and October 2010 are sent prospectively to reputed Pathology Laboratory in Hyderabad for conformation of diagnosis to avoid same institution bias. Surgeries under taken for Appendicitis in Secunderabad's leading Private Corporate Hospital during the months of August, September, October and November 2007 are studied retrospectively. There could be some bias since Pathology Reports of same Hospital are analysed. After RAS is introduced the first 25 Appendicectomy specimens of August, September and October 2010 are sent prospectively to reputed Pathology Laboratory in Hyderabad for conformation of diagnosis to avoid same institution bias.

5. ***Data Collection Tools*** - Pre-designed and Pre-tested questionnaire was used to interview the members of the households.
6. ***Data Analysis*** - SPSS version 10.0 is used for data analysis.

7. ***Limitations of Study*** **-** In the First Part Study, all the villages surveyed are with in 100kms radius from Hyderabad City. The information could be different if far off villages are included in the study. In the Second Part of the Study, analysis of surgical patterns before and after the Rajiv Aarogyasri of only one General Hospital and only one Corporate Hospital are included in the study which is a limitation. In the Third Part of the Study only one surgical procedure, Appendicectomy is analysed in detail which is limitation.

Observations from First Part of Study There is difference in Hospital Admission Preference among different providers across Socio-Economic Classes [P<0.001, Chi Square (X^2) = 265.3]. There is difference in Health Care Delivery by different providers regarding the Temporary Family Planning Needs across different Socio-Economic Classes [P<0.001, Chi Square (X^2) = 141.1], difference in Health Care Delivery by different providers regarding the Terminal Family Needs across different Socio-Economic classes [P<0.001, Chi Square (X^2) = 60.3], difference in Health Care Delivery by different providers regarding Antenatal Care [P<0.001, Chi Square (X^2) = 52.7], difference in Health Care Delivery by different providers regarding Intrapartum Care [P<0.001, Chi Square (X^2) = 130.1], difference in Health Care Delivery by different providers regarding Immunization Needs [P<0.001, Chi Square (X^2) = 16.1]. More Lower Status are getting admitted in Private facilities following Health Insurance in 2010. There is a great reduction in Health Care Delivery by Government Health Providers regarding Temporary Family Planning Needs (-47%), Terminal Family Planning Needs (-98%) of the Lower Status Population. More recently (2010, compared to 2007) there is reduction in Health Care Delivery by Government Health Care Providers regarding Antenatal Care (-32%), Intrapartum Care (-72%) and Immunization Needs (-86%) of the Lower Status Population.

There is a Statistical difference in Health Care Utilization for Diarrhoeal Diseases [P<0.001, Chi Square (X^2) = 78.2], for Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension [P<0.001, Chi Square (X^2) = 61.6], Health Visiting by Health Care Providers [P<0.001, Chi Square (X^2) = 22.1], among different Health Care Providers across Socio-Economic Classes. More recently (2010) there is reduction in Health Care Delivery by Government Health Providers regarding Diarrhoeal Diseases (-43%), Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension Needs (-69%) of the Lower Status Population. The Households specially those of Middle Status and Lower Status Population used to be visited by the Government Health Care Providers, but, after the Social Medical Insurance is introduced the Health Visiting is neglected [P<0.001, Chi Square (X^2) = 22.1].

The survey has found that the Medical Insurance Cards - Rajiv Aarogyasri Cards (RAS Cards) which are meant for Lower Socio-Economic Households are claimed by some of the Middle Status and High Status Households. 8% of High Status Households agreed to have possessed RAS Cards, 60% of Middle Status Households are having the RAS Cards and 99% of Lower Status Households posses them.

The survey found excess Medical Care Delivery following Medical Insurance. In 2010 survey, Post Insurance, Upper Status Households many of them who don't have Insurance Cards showed a increased Hysterectomy incidence (Removal of Female Reproductive Organ = Uterus) of 38%, Middle Status Households (some of them have Insurance Cards) showed a increased incidence of 63% and Lower Status Households (almost every Household with Insurance Cards) showed a increased incidence of 154%. The survey found increase incidence of removal of Appendix (for disease Appendicitis) following Medical Insurance. The jump is many fold among Lower Socio-Economic Status, in 2007 survey 2 individuals had the Appendix removed, while in 2010 survey

31 individuals had the Appendix removed. Similar is the case with Surgery for Incisional (Ventral) Hernia, in 2007 survey 4 individuals from the Lower Status Households were found to have the Surgery performed while 2010 survey 33 individuals were found to have undergone the surgery.

In the **Second Part** of the study which is Hospital Analysis to study the Surgical Interventions in a Government Hospital and in a Private Corporate Hospital, before and after the Medical Insurance, it is found that in 2007, 1480 surgeries were performed in the Government Hospital, while in 2010, 1920 surgeries were performed, a jump of 30%. The jump was clearly more for the surgeries for Insurance covered Diseases, 257% (from 376 surgeries to 968 surgeries), while surgeries not covered by Insurance showed a decline -16% (from 1104 to 952). In 2007, 296 surgeries were performed in Private Corporate Hospital, while in 2010, 740 surgeries were performed, a jump of 250%. The jump was clearly more for the surgeries for Insurance covered Diseases, 779% (from 76 surgeries to 592 surgeries).

In the **Third Part** of the study which is Appendicectomy Analysis, it is found that surgery was performed in 14% of non-cases (Person not having Appendicitis) in Government Hospital in 2007. In 2010, Post Insurance, Appendicectomy was performed in 32% of non-cases in the same Hospital. In 2007, in Private Corporate Hospital Appendicectomy was performed in 48% of non-cases, while in 2010, Post Insurance, the surgery was performed in 92% of non-cases in the same Hospital.

Our findings are comparable to the findings of the RAND Study. RAND Study is the first biggest Health Care Delivery and Insurance experiment which was conducted in US in 1970s. The Population is divided into groups. In one Group Health Insurance is totally free, other Group had 25% Co-Insurance, one Group had 50% Co-Insurance and another group 95% co-insurance.

Annual Hospital visits Per Capita is highest in totally free Insurance Group, visits reduced in Americans who had 25% Co-Insurance, further reduction in number of Hospital visits are seen in Americans who had 50% Co-Insurance and least number of Hospital visits in those who had 95% Co-Insurance.

Findings from first part of our study show that there is a statistical difference in Hospital Admission preference among different Health Care Providers among different Socio-Economic Classes. Admission increased after the Social Medical Insurance is introduced in Andhra Pradesh. The Government Health Facilities admitted 8% more Lower Status patients following Insurance, while Private Health Facilities admitted 540% more Lower Status patients, showing excess Delivery of Medical Services especially by the Private Health Care Providers. In the recent years, (2010), there is reduction in Health Care Utilization from Government Health Care Providers by the Lower Status Population. The Temporary Family Planning Needs showed a reduction of 47%(-47%), Terminal Family Planning Needs showed a reduction of 98%(-98%), Antenatal Care showed a reduction of 32%(-32%), The Intrapartum Care showed a reduction of 72%(-72%), The Immunization Care showed a reduction of 86%(-86%), The Health Care Utilization for Diarrhoeal Diseases and other infectious Diseases in case of Emergencies showed a reduction of 43%(-43), The Health Care Utilization in respect to Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension showed a reduction of 69%(-69%) and the Health Visiting of Households by Government Health Providers showed a reduction of 388%(-388%). The above data clearly showed that the Government is not giving priority to the Health Care Delivery by the Government Health Care Providers.

Further Findings from first part of our study showed excess Medical Care Delivery following Medical Insurance. Sapna Desai Study (2011) in Gujarat showed definite increase in incidence in

Hysterectomy among Insured Women. In her survey, 2214 Rural Women, 1641 Urban Women, insured and uninsured, in low income Households in Ahmadabad, Gujarat is studied. Insurance is provided by SEWA, a Women Organization that operates a community based Health Insurance Scheme. The Incidence of Hysterectomy in uninsured women is 7.2% (Rural Women) and 4.0% (Urban Women) whereas in the insured the incidence is 9.8(Rural Women) and 5.3% (Urban Women). Our survey showed sharp increase incidence of Hysterectomy, Post Insurance. Upper Status Households many of them who don't have Insurance Cards showed a increased Hysterectomy incidence (Removal of Female Reproductive Organ = Uterus) of 38%, Middle Status Households (some of them have Insurance Cards) showed a increased Incidence of 63% and Lower Status Households (almost every Household with Insurance Cards) showed a increased Incidence of 154%. Early hysterectomy can harm women's health. Menopause is defined as the time of cessation of ovarian function resulting in permanent stoppage of menstrual cycles. Most women reach menopause between the ages of 45-55, with the average age around 50. Early menopause occurs after surgery since blood supply to the ovaries gets reduced after removal of the uterus. During reproductive years the hormones produced in the ovary are estrogen, progesterone, estrogen, inhibin and in small amounts testosterone and Androsterone (can get converted to weak estrogen in the fat tissue). Menopausal ovary continue to provide Androsterone which gets converted to oestrone. Though weaker than estrogen (10 times less potent than regular estrogen), oestrone is capable of exerting estrogenic effect on the target tissues. Estrogen is the hormone that helps prevent calcium loss and bone breakdown in women. Due to a drop in estrogen level in the immediate five years of menopause a women may lose up to 15-25% of bone mass, leading to mild to moderate or severe osteoporosis. When the natural onset of menopause comes earlier than expected or when it is caused by reduced blood supply to

ovaries following surgical removal of uterus. A women's estrogen protection is reduced for a longer period of time span compared to natural menopausal situations.

Our survey found Excess Delivery of Medical Care (in the form of increase incidence of Appendicectomy) following Insurance. The jump is many fold among Lower Socio-Economic Status. In 2007, survey 2 individuals had the Appendix removed, while in 2010, survey 31 individuals had the Appendix removed. Similar is the case with Surgery for Incisional (Ventral) Hernia, in 2007 survey 4 individuals from the Lower Status Households were found to have the Surgery performed while 2010 survey 33 individuals were found to have undergone the surgery.

In the **Second Part** of the study which is Hospital Analysis to study the Surgical Interventions in a Government Hospital and in a Private Corporate Hospital, before and after the Medical Insurance, it is found that surgeries covered by Insurance showed a jump of 257%, while the surgeries not covered by Insurance showed a decline of -16% in the Government Hospital. The surgeries covered by Insurance showed a jump of 779% in Private Corporate Hospital. *It is clear that Insurance appears to encourage people to seek more Care from the expensive Private Corporate Hospital compared to the Government Hospital. There seems to be tilting the funds to the already flourishing Private Sector.*

In the **Third Part** of the study which is Appendicectomy Analysis it is found that Post Insurance surgery was performed in 92% of non-cases by the Private Corporate Hospital. This is a best example of how the Tax Payers money is being diverted to Private Corporate Hospital via Social Medical Insurance. *If stringent regulatory structures and an effective implementation mechanism are put in place, the deleterious effect of Voluntary Private Health Insurance could be ameliorated to some extent. There is tendency to over utilize and over prescribe Medical Care. Both demand-side and supply-side Moral Hazards generated by the Insurance Scheme.*

The Following Conclusions are made 1. Conclusion from the first part of the study is admissions increased after the Social Medical Insurance is introduced in Andhra Pradesh. The Government Health Facilities admitted 8% more Lower Status patients following Insurance, while Private Health Facilities admitted 540% more Lower Status patients, showing excess Delivery of Medical Services especially by the Private Health Care Providers. In the recent years, (2010), there is reduction in Health Care Utilization from Government Health Care Providers by the Lower Status Population. The Temporary Family Planning Needs showed a reduction of 47%(-47%), Terminal Family Planning Needs showed a reduction of 98%(-98%), Antenatal Care showed a reduction of 32%(-32%), The Intrapartum Care showed a reduction of 72%(-72%), The Immunization Care showed a reduction of 86%(-86%), The Health Care Utilization for Diarrhoeal Diseases and other infectious Diseases in case of Emergencies showed a reduction of 43%(-43), The Health Care Utilization in respect to Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension showed a reduction of 69%(-69%) and the Health Visiting of Households by Government Health Providers showed a reduction of 388%(-388%). The above data clearly showed that the Government is not giving priority to the Health Care Delivery by the Government Health Care Providers. 2. Medical Care Delivery increased following Medical Insurance. Our survey concluded sharp increase incidence of Hysterectomy, Post Insurance. Upper Status Households many of them who don't have Insurance Cards showed a increased Hysterectomy incidence (Removal of Female Reproductive Organ = Uterus) of 38%, Middle Status Households (some of them have Insurance Cards) showed a increased Incidence of 63% and Lower Status Households (almost every Household with Insurance Cards) showed a increased Incidence of 154%. Early hysterectomy can harm women's health. Most women reach menopause between the ages of 45-55, with the average age around 50. Early menopause occurs

after surgery since blood supply to the ovaries gets reduced after removal of the uterus. Estrogen is the hormone that helps prevent calcium loss and bone breakdown in women. So there could be a loss up to 15-25% of bone mass, leading to mild to moderate or severe osteoporosis. Thus, Medical Insurance is leading to excessive Delivery of Medical Care there by responsible for reduced Health Status and Morbidity. 3. Our survey found Excess Delivery of Medical Care in the form of increased incidence of Appendicectomy and in the form of increased incidence in Surgery for Incisional (Ventral) Hernia. 4. Conclusion from the second part of the study is surgeries covered by Insurance showed a jump of 257%, while the surgeries not covered by Insurance showed a decline of -16% in the Government Hospital. The surgeries covered by Insurance showed a jump of 779% in Private Corporate Hospital. *It is clear that Insurance appears to encourage people to seek more Care from the expensive Private Corporate Hospital compared to the Government Hospital. There seems to be tilting the funds to the already flourishing Private Sector.* 5. Conclusion from the third part of the study is Post Insurance Appendectomy surgery was performed in 92% of non-cases by the Private Corporate Hospital. This is a best example of how the Tax Payers money is being diverted to Private Corporate Hospital via Social Medical Insurance. *If stringent regulatory structures and an effective implementation mechanism are put in place, the deleterious effect of Voluntary Private Health Insurance could be ameliorated to some extent. There is tendency to over utilize and over prescribe Medical Care. Both demand-side and supply-side Moral Hazards generated by the Insurance Scheme.*

The Following Recommendations are made 1. *Reduce Package Amount* The package amount should be 20% - 30% over the cost price and not 100% - 300% for example: The package for Hysterectomy in CGHS and ESIS is Rs. 13,000, Yeshasvini is Rs.6,000/-, RSBY Rs.10,000/-,

but in RAS(Andhra Pradesh) Rs.35,000. By reducing the Package Amount Moral Hazard can be reduced. 2. *Stringent Regulation* A robust regulatory system for quality and price control, supported by periodic technical and social audits, would be needed to ensure that the imperfect market mechanisms of Private Health Care Provision do not lead to inappropriate or unduly expensive care, if the Government chooses to purchase Privately provided Tertiary Care. 3. *Modify the present Medical Insurance in Andhra Pradesh* It is seen that the Medical Insurance in the State is not improving the Health Status. It is leading to excess Delivery of Medical Care, which is costly, by the Private Tertiary Care Hospitals and Primary Health Care Utilization provided by the Government Health Care Providers which is cost effective is reduced. The future modified Health Insurance should cover the Primary Care and the Secondary Care to improve the overall Health Status of the Population of Andhra Pradesh.

Justification: This study is undertaken to find out the Health Care Utilization in different Socio-economic population, the preferences of the population in getting the treatment from Government facilities, Private facilities etc. After the Social Insurance called Rajiv Aarogyasri Scheme (RAS) was introduced in A.P., its impact in the Health Care Utilization among different Socio-economic status population is analyzed. The impact of the Insurance in a Government Hospital and in a Private Corporate Hospital is analyzed. The incidence of a single commonly performed Surgery-Appendicectomy before and after the Insurance is analyzed to study the impact of the Insurance on surgical procedures.

Chapter 2 : Literature Review

MEDICAL CARE AND HEALTH CARE

The aim in many countries is to reach the whole population with adequate health care services and to ensure their utilization.

Many people mistakenly believe 'Health Care' and Medical Care' are synonymous. Health Care is both Preventive Care and Curative Care where as Medical Care is purely Curative in nature. Health Care is defined as "Multitude of services rendered to individuals, families or communities by the agents of the health services or professions, for the purpose of promoting, maintaining, monitoring or restoring health. The term "Medical Care" refers chiefly to those personal services that are provided directly by physicians or rendered as a result of the Physician's instruction.

Health Care Delivery consists of Inputs, i.e., the lower health status, with the help of resources, will be converted to Output i.e., the changed health status or improved health status which is expressed in terms lives saved, deaths averted, diseases prevented, cases treated, expectation of life prolonged etc. Resources mean Health Manpower, Money and Material.

The aim of health care services is to improve the health status of population. Health services should be comprehensive, accessible, acceptable, provide scope for community participation and available at an affordable cost.

The health care system is intended to deliver the health services. In India it is represented by five major sectors or agencies. The Public Health Sector includes primary

health centers, community health centers, district hospitals, teaching hospitals, specialist hospitals. etc., The private sector includes private hospitals, nursing homes, clinics etc., The indigenous system of medicine includes ayurveda, unani, siddha and homoeopathy. The voluntary health agencies in India includes Indian red cross society, Indian medical association, Indian dental association, Tuberculosis association of India, the National health programmes for eradication of communicable diseases, control of population, rural health, etc.,

SOCIO-ECONOMIC CLASSIFICATION (INDIA)

In Indian studies the classification of British Registrar General based on occupation was tried first. Later from 1961 **Prasad's Classification** based on per capita monthly income was followed. This classification was modified in 1968, 1970 and 1997. **Kuppuswami Scale** is also widely used to measure the socio-economic status of an individual in urban community based on three variables namely education, occupation and income. In rural areas, **Pareekh classification** based on nine characteristics namely 1. Caste 2. Occupation of family head 3. Education of family head 4. Level of social participation of family head 5. Land holding 6. Housing 7. Farm power 8. Material possessions 9. Type of family.

The general population is divided into segments based on their social and economic status. Previously researchers used the income based classification. A set of bands were identified and on the basis of incomes stated by the respondent of a household they were classified into segments such as: 1. Below poverty line 2. Poor 3. Lower middle class 4.

Middle class 5. Upper middle class 6. Affluent/rich. The above method of classification has many shortcomings: (a.) Credibility issues – Many people hide or mask their actual incomes to escape tax. Very few people actually reveal their true income. (b.) Difficulty in tracking over a period of time – Due to inflation and other issues, the value of a particular salary band keeps on changing. For example the Rs. 10,000 of today may be equal to Rs. 8,000 of tomorrow. (c.) Difficulty in comparing geographies – Incomes used to vary considerably by the geography that one belonged to given a host of condition… thereby making it impossible to compare and assess different geographical locations. (d.) Ignorance about actual income – In case of blue collared workers and below, there is a great chance of people not even knowing about their total income as their income is susceptible to vagaries… daily income as against a regular salary, several days in a month where they cannot find work, seasonal incomes, especially in businesses such as agriculture. Hence, there is a need for a system that was based on credible information, system that stood the test of time, system that was relevant across the length and breadth of the country and system that worked across various cross sections of the society. With these objectives modern socio-economic system was designed. The modern socio economic classification method uses two major variables to classify the population at large i.e., Education and Occupation of the chief wage earner. The Chief Wage Earner is defined as the person who contributes the maximum to the total income of the family. This was relevant for the Indian condition, as the main contributor to income usually has the maximum say with regards to purchase decisions in the family. On these basis the society can be classified into different socio economic classes A1, A2, B1, B2, C, D, E1, E2 (in that order… from affluent to deprived). Since the above classification is based on

the Education and Occupation background, most people will not have any issues in sharing information. The classification can be applied across India… as it bypasses the vagaries that are otherwise associated with income based classification, which is usually geography dependant. The modern socio economic classification system has two versions: the urban version and the rural version. The urban version uses variables i.e., Education and Occupation… the rural version on the other hand uses Education and Type of House, as occupations can be almost similar across most Indian villages. The houses in villages can be broadly classified as (a). Pucca House (means house with concrete and steel), (b).Kaccha House (means thatched houses/huts), (c). Semi Pucca House (means a mix of concrete and thatched houses).

CWE Education Code		**CWE Occupation Code**		
Illiterate	1	Unskilled Worker		1
Literate, but no formal schooling	2	Skilled Worker		2
School - Upto 4th Standard	3	Petty trader		3
School - upto 5th to 9th Standard	4	Shop owner		4
SSC/HSC (10th - 12th)	5	Businessmen	None	5
Some college (incl. Dip) but not graduate	6	Industralist (no. of)	1 to 9	6
Graduate - general - BA, BSc, BCom	7	Employees	10 +	7
Gradudate - Profess - BE, MBBS, BTech	8	self Employeed professional		8
Post Grad - General - MA, MSc, MCom	9	Clerk/Salesman		9
Post Grad -Professional - ME, MD, M Tech	10	Supervisory level		10

Table 1: Urban SEC Grid

Occupation of the Chief Wage Earner	Illiterate	School up to 4th /Literate but no formal Schooling	School - 5th to 9th	SSC/ HSC	Some College but not graduate	Graduate/ Post Graduate general	Graduate/ Post Graduate Professional
Unskilled	E2	E2	E1	D	D	D	D
Skilled workers	E2	E1	D	C	C	B2	B2
Petty traders	E2	D	D	C	C	B2	B2
Shop owners	D	D	C	B2	B1	A2	A2
Businessmen 1- 9	D	C	B2	B1	A2	A2	A1
Non Business men 1-9	C	B2	B2	B1	A2	A1	A1
Industrialists 10+	B1	B1	A2	A2	A1	A1	A1
Self employed	D	D	D	B2	B1	A2	A1
Clerical	D	D	D	C	B2	B1	B1
Supervisory	D	D	C	C	B2	B1	A2
Officers/Executives-Junior	C	C	C	B2	B1	A2	A2
Officers/Executives-Senior	B1	B1	B1	B1	A2	A1	A1

Table 1: Urban SEC Grid (Cont)

Education of Chief Wage Earner	Type of House		
	Pucca	Semi-Pucca	Kutcha
Illiterate	R4	R4	R4
(Self-Learning)/No School	R3	R4	R4
Up to Class 4	R3	R3	R4
Class 4 - Class 9	R3	R3	R4
SSC/HSC	R2	R3	R3
College	R1	R2	R3
Graduation/PG-General	R1	R2	R3
Professional degree	R1	R2	R3

Table 2: Rural SEC

URBAN AND RURAL SOCIETY:

Urban Society:

Any urban area should have an administrative unit like a Municipality, Metropolitan Council, Notified Area Council or Cantonment Board. It should have more than 10 thousand population and more than 75% of population should engage in non-agricultural occupation. The density should be more than 1000 per sq. mile.

Urban society includes the towns, cities and metros with a specific way of life. An urban society can be defined as an area having higher density of population, people engaging mostly in occupations other than agriculture and domestication of animals, having a distinct ecology and culture different from that of the large society's culture. Cultural heterogeneity is found in the urban areas because people from various areas having different cultures migrate to the towns in search of employment, education and medical and health care. Cities have a distinct environment that is not natural but a man made environment. The occupation of the urban areas is mainly non-agricultural, i.e. based on manufacturing, trade & commerce, professional and governance, etc. Formal social control is found in the urban areas in the form of courts, police and other administrative bodies. The interaction among people is based on secondary contact and not primary contact. It means face-to-face and individual to individual interaction is not possible in the urban areas. Urban way of life means people have formal interaction, impersonal behaviour, non-kinship relationships, cultural exhibitionism, passing leisure time in clubs, parks, restaurants, cinema halls or markets. Economic organisation is based on market and monetary economy. Civic facilities like roads, electricity, water,

communication, park, hotels and hospitals etc. are better. Push and pull factors increases urban population. Push factor means that lack of employment in the villages pushes the villagers to the towns in search of jobs. Pull factor means the relatives in the town invite their close people and try to give them jobs. Besides, the entertainment aspect of urban life attracts or pulls the people to the towns. Metro city will have 10 lakhs plus population, class I city 1 lakh plus, class II town 50 thousand plus, class III town 20 thousand plus, class IV town 10 thousand plus.

Rural Society:

Agriculture is the predominant occupation among them. It is not the only source of income but also the way of life for the villagers. The village community is small in size. It means they live in small geographical areas with lower density of population as compared to the towns. They have primary group behaviour, i.e. face-to-face relationship is found among the members of the village. Their social structure is based on kinship and family relationships. Here the role of lineage (Vansh) is very important. Mostly they live in joint family. A joint family is a group of people who live under one roof, eat food cooked at one hearth, have joint property, participate in common worship and are linked to each other through kinship ties. The joint family has greater generation bondage than the nuclear family. They are more conservative and tradition oriented towards the performance of rituals as well as belief in deities. Group feeling and mutual cooperation is more evident among them. They have a brotherhood feeling. They co-operate with each other in times of exigencies. Their culture is also known as folk culture, i.e. consisting of customs, rituals and norms, etc. which are unwritten, but orally transmitted and learned. Since they have a common socio-economic background, they do not have

differences in ideology towards life. Hence they are homogenous in nature. Traditionally, their economy is based on agriculture having primitive technology and mono-cropping pattern. It was less productive. Lack of proper marketing facilities and introduction of monetary economy has resulted in poverty. Further, decline in cottage industries has pushed them to migrate to neighbouring towns. Village India is largely based on caste system, which has a hierarchical (castes are ranked according to their purity and population, their religious customs and practices and the nature of their occupation) base. For example, Brahmins are ranked as highest one because they do the purest occupation of performing rituals and teaching, whereas, shudras is ranked lowest because of his impure occupation of working as scavengers. They follow the above hierarchical system intensely. Modern way of living and thinking (based on achievement of the individual and their rational thinking) is lacking in rural society. They still follow the ascriptive model of life, hence their mobility is restricted. Any deviant behaviour is dealt with strictness in the rural areas. Since modern technology has not gained firm ground in rural areas, people are still following the age-old methods of cultivation as well as solving the related day-to-day problems. It involves hard work throughout the day as it is a labour intensive occupation. They have a relatively self-sufficient economy particularly in terms of production and consumption. They have a static economy, since they lack modern technology, modes of investment and a market economy. They cling to conservative and traditional style of living: They have a strong tradition and is known as the little tradition. Their attachment to the past is strong.

UNEQUAL SOCIETY AND HEALTH CARE DELIVERY:

Social and economic inequality is detrimental to the health of any society. Poverty, which is a result of social and economic inequality in a society, is detrimental to the health of population. The outcome indicators of health (mortality, morbidity and life expectancy) are all directly influenced by the standards of living of a given population. More so, it is not the absolute deprivation of income that matters, but the relative distribution of income [Wilkinson, et al 1992] [1]. Various international studies have documented a strong association between income inequality and excess mortality [2,3]. In a study by Kennedy et al, income inequality was shown to directly affect the total mortality in a given population [$p < 0.05$] [4]. The same study measure income inequality by 'Robin Hood Index', which is the part of income that needs to be redistributed from the rich to the poor to achieve economic equality. 1% rise in this index led to 21.7 excess deaths per 100,000 populations. This shows the profound effect income has on the health of a population. When applied to Indian context these social theories translate into millions of lives that perish due to lack of socio-economic equality. Since the emergence of free India in 1947, economic egalitarianism dominated the economic policies. Socialism and government-centered economic policies were favoured over the profit-making private enterprise and capitalism. Though admirable for its motives, these policies led to overdependence on the bureaucracy and stifled the growth of free enterprise. Slow and unequal social mobilization in various parts of India led to an uneven economic growth. Caste and social polarization, literacy and educational levels, natural resources, levels of corruption and role of political leadership has resulted in some Indian states doing better than others on

the economic front [5]**.** This basic inequality was magnified by the rapid but unequal economic growth that India has witnessed in the last two decades. Amidst the rising of living, lie pockets of terrible poverty and deprivation.

Healthcare resources in India though not adequate, are ample. There has been a definite growth in the overall healthcare resources and health related manpower in the last decade. The number of hospitals grew from 11,174 hospitals in 1991 (57% private) to 18,218 (75% private) in 2007 [6]**.** In 2000, the country has 1.25 million doctors. That translates into one doctor for every 1800 people. If other systems including Indigenous System of Medicine (ISM) and homeopathic medicine are considered, there is one doctor per 800 people. It not only satisfies but also betters the required estimate of one doctor for 1500 population [7]**.** Approximately 15,000 new graduate doctors and 5,000 post graduate doctors are trained every year. The country has an annual pharmaceutical production of about 260 billion (INR) and a large proportion of these medicines are exported [8]. The ratio of hospital beds to population in rural areas is fifteen times lower than that of urban areas [6]**.** The ratio of doctors to population in rural areas is almost six times lower than in urban population [6]. Per capita expenditure on public health is seven times lower in rural areas, compared to government health spending for urban areas. Though the spending on healthcare is 6% of gross domestic product (GDP), the state expenditure is only 0.9% of the total spending. People using their own resources spend rest of it. Thus only 17% of all health expenditure in the country is borne by the state, and 82% comes as 'out of pockets payments' by the people. This makes the Indian public health system grossly inadequate and under-funded. Only five other countries in the world are worse off than India regarding public health spending (Burundi, Myanmar, Pakistan, Sudan,

Cambodia) [9]. As a result of this dismal and unequal spending on public health, the infrastructure of health system itself is becoming ineffective. The most peripheral and most vital unit of India's public health infrastructure is primary health centre (PHC). In a recent survey it was noticed that only 38% of all PHCs have all the essential manpower and only 31% have all the essential supplies (defined as 60% of critical inputs), with only 3% of PHCs having 80% of all critical inputs. The reduction of public health spending and the growing inequalities in health and health care are taking its toll on the marginalized and socially disadvantaged population. The Infant Mortality Rate in the poorest 20% of the population is 2.5 times higher than that in the richest 20% of the population. In other words, an infant born in a poor family is two and half times more likely to die in infancy, than an infant in a better off family [**10].** A child in the 'Low standard of living' economic group is almost four times more likely to die in childhood than a child in the 'High standard of living' group. Child born in the tribal belt is one and half times more likely to die before the fifth birthday than children of other groups. Female child is 1.5 times more likely to die before reaching her fifth birthday as compared to a male child [**10].** The female to male ratios for children are rapidly declining, from 945 girls per 1000 boys in 1991, to just 927 girls per 1000 boys in 2001[**11].** The delivery of a mother, from the poorest quintile of the population is over six times less likely to be attended by a medically trained person than the delivery of a well off mother, from the richest quintile of the population. A tribal mother is over 12 times less likely to be delivered by a medically trained person [1**0].**

Access difficulties to health care can be either due to 1.Geographical distance 2.Socio-economic distance 3.Gender distance. The issue of geographic distance is important in a

large country like India with limited means of communication. Direct effect of distance of a given population from primary healthcare centre on the childhood mortality is well documented [**12].** It has been shown that the effect of difficult access to health centres is more pronounced for mothers with less education [**13].** Incentives for doctors and nurses to move to rural locations are generally insufficient and ineffective. Maternal mortality is clearly much higher in rural area [**14]** as trained medical or paramedical staff attending fewer births and transport in case of pregnancy complications is difficult. Geographical difficulties in accessing healthcare facilities thus is an important factor, along with gender discrimination, that contributes to higher maternal mortality in women who live in remote areas especially the tribal women in India [**15].** A different aspect of healthcare access problems is noticed in cases of 'urban poor'. Data from urban slums show that infants and under-five mortality rates for the poorest 40% of the urban population are as high as the rural areas. Urban residents are extremely vulnerable to macroeconomic shocks that undermine their earning capacity and lead to substitution towards less nutritious, cheaper foods. People in urban slums are particularly affected due to lack of good housing, proper sanitation, and proper education. Urban slums are also home to wide array of infectious diseases (including HIV/AIDS, tuberculosis, hepatitis, dengue fever, pneumonia, cholera and malaria) that easily spread in highly concentrated populations where water and sanitation services are non-existent [**16].** Though the healthcare facilities are overwhelmingly concentrated in urban areas, the 'socio-economic distance' prevents access for the urban poor. These socio-economic barriers include cost of healthcare, social factors, such as the lack of culturally appropriate services, language/ethnic barriers, and prejudices on the part of providers. There is also a significant lack of health

education in slums. All these factors lead to an inability to identify symptoms and seek appropriate care on the part of the poor [**17]**. The third most important access difficulty is due to gender related distance. It is said that health of society is reflected from the health of its female population. From socio-cultural and economic perspectives women in India find themselves in subordinate positions to men. They are socially, culturally and economically dependent on men [**18]**. Women are largely excluded from making decisions, have limited access to and control over resources, are restricted in their mobility, and are often under threat of violence from male relatives [**19].** In general an Indian woman is less likely to seek appropriate and early care for disease, whatever the socio-economic status of family might be. This gender discrimination in healthcare access becomes more obvious when the women are illiterate, unemployed, widowed or dependent on others [**20].**

Any inequality in social, economical or political context between various population groups in a given society will affect the health indicators of that particular society. The most sensitive indicators of health of a society are infant and maternal mortality rates (IMR and MMR). IMR is still significantly high in India. Around 2.2 million infants die every year [**21].** In fact the National Health Policy 1983 target to reduce Infant Mortality Rate to less than 60 per 1000 live births has still not been achieved [**22]**. The National Health Policy had a target to reduce Maternal Mortality Rate to less than 200 per 100,000 live births. However, 407 mothers die due to pregnancy related causes, for every 100,000 live births even today. In fact, as per the NFHS surveys in the last decade Maternal Mortality Ratio have increased from 424 maternal deaths per 100,000 live births to 540 maternal deaths per 100,000 live births [**23]**. Apart from these avoidable deaths, India

has seen persistence and resurgence of many infectious diseases. About 0.5 million people die from tuberculosis every year in India and this number has hardly changed in the last five decades **[24].** Other communicable diseases like Malaria, Encephalitis, Kala Azar, Dengue and Leptospirosis to name a few, are far from being eradicated. The outbreak of dengue in India in 1996-97 saw 16,517 cases and claimed 545 lives **[25].** Simple curable diseases like diarrhea, dysentery, acute respiratory infections and asthma also take their toll due to weak public health system and lack of awareness. Around 0.6 million children die each year from an ordinary illness like diarrhoea. While diarrhea itself could be largely prevented by universal provisions of safe drinking water and sanitary conditions, these deaths can be prevented by timely administration of Oral Re-hydration Solution(ORS) which is presently administered in only 27% of cases **[23].** Cancer claims over 0.3 million lives per year and tobacco related cancers contribute to 50% of the overall cancer burden, which means that such deaths might be prevented by tobacco control measures **[22].** Health outcome indicators failed to improve in spite of various state run programs, mushrooming of private healthcare and perceptible increase in the Gross Domestic Product (GDP). This underscores the importance of social and economic inequality as the stumbling block.

Economic Inequality and Private Health Care:

The growth of private healthcare sector has been largely seen as a boon, however it adds to ever-increasing social dichotomy. The dominance of the private sector not only denies access to poorer sections of society, but also skews the balance towards urban-biased, tertiary level health services with profitability overriding equality, and rationality of care often taking a back seat. The increasing cost of healthcare that is paid by ‘out of pocket’

payments is making healthcare unaffordable for a growing number of people. The number of people who could not seek medical care because of lack of money has increased significantly between 1986 and 1995 **[26].** The proportion of people unable to afford basic healthcare has doubled in the last decade. One in three people who need hospitalization and are paying out of pocket are forced to borrow money or sell assets to cover expenses **[26]**. Over 20 million Indians are pushed below the poverty line every year because of the effect of out of pocket spending on health care. In the absence of any effective regulatory authority over the private healthcare sector the quality of medical care is constantly deteriorating **[27].** Powerful medical lobbies prevent government from formulating effective legislation or enforcing the existing ones. A recent World Bank report acknowledges the fact that doctors over-prescribe drugs, recommend unnecessary investigations and treatment and fail to provide appropriate information for patients even in private healthcare sector **[27]**. The same report also states the relation between quality and price that exists in the private healthcare system. The services offered at a very high price are excellent but are unaffordable for a common man. This re-emphasizes the role socio-economic inequality plays in healthcare delivery.

ECONOMICS IN HEALTH CARE:

The most important step is using economics as a tool of public policy. Sound policy making is based on sound economic principles applied in a sensitive and uniform manner. Economics is a way of organizing our thinking about problems that confront us in our daily lives. To think like an economist requires a disciplined approach to a problem. Sound reasoning within a systematic framework is essential. When resources are used in medical care delivery, those same resources are not available for use in other beneficial activities: for example, food, distribution, education, housing, and national defense.

The term opportunity cost is defined as the potential benefit that could have been received if the resources had been used in their next best alternative. Tax money used to purchase medical care for the elderly cannot be used to buy education for young. Money spent in a rehabilitation program for drug addicts is not available to spend on prenatal care for indigent women. Adopting the concept of economic efficiency implies that choices should be made in a way that maximizes the total benefit from the available resources. In the practice of medical care delivery, this involves the evaluation of health care alternatives by calculating the benefits and costs of each and allocating resources in a way that maximizes the net benefit to the community. Economics is different from other social sciences in its emphasis on rational decision making under conditions of scarcity. We cannot satisfy every desire we have; we must make choices. Scarcity is the reason that we study economics. In Research And Development (RAND) insurance experiment empirical results supported the hypothesis that higher out-of-pocket payments would lead to lower utilization measured by fewer physician visits.

Model Building:

A model is nothing more than a way of organizing knowledge on a particular issue so that it becomes more than a set of random observations. The terms model and theory are often used interchangeably. We use microeconomic model to study how a patient's demand for a particular diagnostic test varies depending on the out-of-pocket cost of the test. We can examine how a shortage of qualified nurses affects nurses' salaries or how the relative income of specialists affects the demand for residency-training positions in all specialities.

Economic Optimization

When more than one alternative is available, the optimal choice produces an outcome that is most consistent with the decision maker's stated objectives. Optimization is nothing more than discovering the best course of action given the decision maker's goals and objectives. Would it be better for the hospital to enter into a contract for housekeeping services with an outside firm or should this activity be performed in-house? Following an increase in patient volume, should physicians in a small group practice hire an office manager, an additional nurse, or both?

Choices in health care delivery must be made at two levels; (1) individual physicians must decide on a particular course of treatment for a particular patient; and (2) policymakers must decide on a course of action in planning the health services availability for an entire community. The delivery of health care in any form must answer the following question: whom to treat; when to begin treatment; where to treat; and how much treatment to offer? Of, the many ways to go about choosing the best alternatives, economic efficiency will be the criterion that is important.

Firms attempt to maximize profit given production technology and the cost of available resources. Consumers attempt to maximize satisfaction subject to limited money income and the prices of goods consumed. Workers supply labour services in an attempt to maximize satisfaction derived from goods and services consumed and leisure time available subject to current wages. Together, this more or less independent behavior results in markets tend to forward equilibrium as represented by the familiar, or soon to be familiar, supply and demand framework.

Within this framework, what does optimal mean? Using the rhetoric of economics, it means that individuals will continue to purchase a goods or service, as long as the marginal benefits from consumption (MB) exceed the marginal costs (MC). Given that marginal benefits are declining and marginal costs increasing as more of the good is consumed, eventually the two are equal. As soon as MB = MC, equilibrium is reached and the individual will consume no more. The total benefits (TB) received from a medical procedure increase as more care is provided, but at a decreasing rate. For reasons both ethical and practical, medical practitioners tend to provide additional care as long as the treatment results in positive benefits. Beyond point A, additional medical care is considered equivocal or wasteful – the marginal benefits are not worth the medical risk.

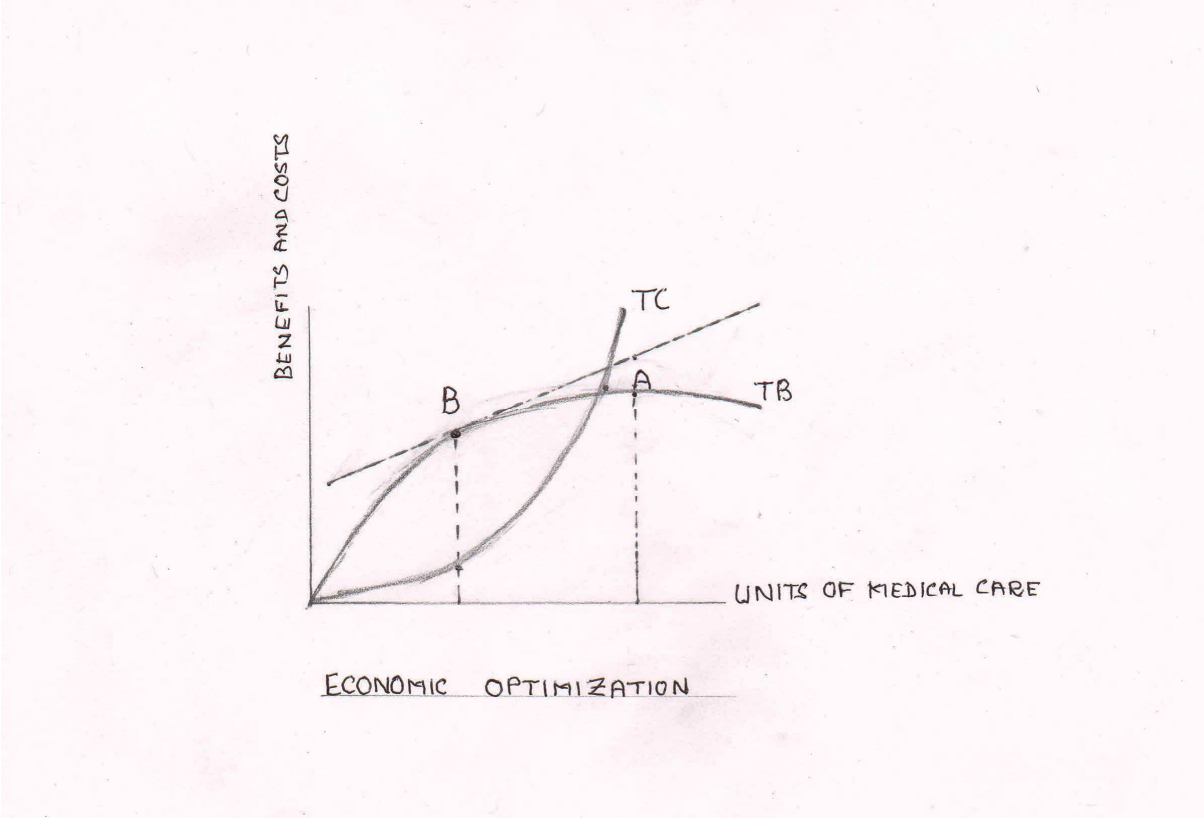

FIGURE 1: ECONOMIC OPTIMIZATION

From the perspective of economics, exhausting all possible medical benefits wastes scarce resources. In fact, any care provided beyond the point B is wasteful – the marginal benefits received from the additional care fall short of the marginal costs. Because cost measures forgone opportunities in economics, the resources used up in providing the excess care could be put to better use somewhere else. Money wasted in the provision of unnecessary care cannot be used to further other important goals, such as improving education, repairing the interstate highway system, or cleaning up the environment.

When consumption is being subsidized, as in the case of medical care purchased with insurance, the cost to the consumer is less than the total resource cost. In the case of the insurance subsidy for medical care , the cost of an extra unit of care to the individual is close to zero, providing an incentive to consume medical care with low resources are treated as if they have little or no value – a prescription for overconsumption. This tendency to over-consume means that medical care consumption is likely to be closer to point A (where the marginal benefit is close to zero) than point B (where the marginal benefit is equal to marginal cost) – a phenomenon called flat-of-the-curve medicine.

Supply and Demand:

Many consider supply and demand the two most useful concepts in economics. Regardless of the issue being studied, the analysis often hinges on some aspect of supply and demand. The theory of supply and demand is also a powerful tool in predicting future behavior. How does a change in price affect the consumer's willingness or ability to purchase a commodity?

The Law of Demand:

There is an inverse relationship between the amount of a commodity that a person will purchase and the sacrifice that must be made to obtain it. The higher the price of an item, the less is purchased, and the lower the price, the more purchased. Other things affect the demand relationship – prices of related items, the consumer's income, and preferences. As long as there are no changes in these other factors, the inverse relationship holds. When prices rise, less is desired. When prices fall, more in desired.

Changes in price affect the demand relationship in two very important ways. First, consumers have alternative ways to spend their money. If the price of a name-brand drug goes up, an alternative drug or even a generic can be substituted for the name brand. Or if money is tight and no insurance coverage is available, the patient can choose to skip the treatment and let the disease run its course. In any case, when price rises, the quantity demanded goes down. Economists refer to this phenomenon as the substitution effect.

Effect of Substitutes / Compliments

A change in the price of a related commodity changes the demand for the commodity in question. Related commodities are either substitutes or complements. An increase in the price of a substitute increases the demand for a commodity. Coronary artery bypass graft surgery (CABGS) and cardiac angioplasty are two procedures used to accomplish the same outcome. If the price of CABGS increases, heart patients (or at least whoever is paying for the procedure) will view cardiac angioplasty as a more viable alternative. The demand for cardiac angioplasty will increase. When the price of a complement goes down, demand goes up. Complementary goods are consumed together. Dentists often

recommend that full-mouth X-rays complement the annual dental exam. If the price of the X-ray goes down, more patients will make appointments for dental exams.

An increase in the size of the population or its composition affects demand. More people means a higher demand for all goods and services – including medical care. The addition of an infant to a family increases the demand for visits to the paediatrician. An increase in the birth rate raises the demand for disposable diapers even if the average baby still uses the same number of diapers per day. An older population has a higher demand for treatments for chronic illnesses such as arthritis and emphysema.

Effect of Income: Normal Good / Inferior Good

A change in income affects the consumer's ability to purchase goods and services. In situations where higher income leads to increased demand, the good in question is referred to as normal good. In some cases, an increase in income leads to a decrease in demand. In those situations, the good is called an inferior good. Medical care is usually considered a normal good. For individuals with comparable levels of health, higher income means a higher demand for medical care.

Price Elasticity of Demand:

The law of demand is used to answer the question: When price changes, what is the effect on quantity demanded? Taking this notice one step further, price elasticity of demand is a technical concept used to answer the question; when prices change, how much does quantity demanded change? The inverse relationship between price and quantity is relatively easy to comprehend. In most cases it is important to include not only the direction of the change but the magnitude of the change.

Price elasticity of demand is defined as the percentage change in quantity demanded divided by the percentage change in price.

If consumer demand increases 10 percent because of a 5 percent price decrease, price elasticity of demand is 10 percent divided by 5 percent, or 2.0.

In the case where price elasticity equals zero, consumers are completely unresponsive to changes in price. Higher price does not affect quantity demanded. Life-saving procedures, such as kidney dialysis and organ transplants, may also fall into this category. Elastic means consumers are intolerant of even small changes in price and refuse to buy the item if its price goes up at all.

When price changes, it is important to know how much quantity demanded changes. It is also important to realize that this same information enables us to predict what will happen to consumer expenditures. With perfectly elastic demand any price increase causes quantity demanded to fall to zero.

What determines the price elasticity of demand? Why are consumers more tolerant of price changes for some items and not others? Price elasticity depends primarily on the consumer's ability to find suitable substitutes for a good or service. The easier it is to substitute, the more elastic the consumer's demand. Patients with no established preference for a general practitioner (GP) might view a 20 percent increase in the price of an office visit as intolerable in light of the number of suitable alternative GPs in practice.

Consumers are more sensitive to a price change on the purchase of big-ticket items. Demand for non-urgent procedures will be more elastic than demand for emergency procedures. The more time a patient has to make a decision, the more price sensitive he or she will likely be. A patient entering the emergency room with a compound fracture

does not have much time to shop around for an orthopedic surgeon. Those patients desiring elective rhinoplasty have the opportunity and the luxury to shop around for the best plastic surgeon, the best price, the best financing, or whatever else they consider important.

The Law of Supply:

The higher the price of an item, the greater is its availability. At lower prices, less will be available.

Law of supply – Positive relationship at higher prices, more are available. At lower prices less are available (Opp. Of Law of demand).

New technology that reduces the cost of producing a commodity or service increases the level of supply. Arthroscopic surgery provides a clear example of a technological advance that represents both a cost-reducing and quality enhancing change. The repair of a damaged anterior cruciate ligament was once a major ordeal for both surgeons and patient. Before the introduction of the laparoscope, an athlete who suffered his knee injury was faced with a four-hour surgery requiring a six-inch incision, several days in the hospital, and six weeks on crutches. Today, the same procedure can be performed as outpatient surgery. It requires three small incisions and a much shorter rehabilitation.

Equilibrium:

Price changes affect buyers and sellers differently. An increase in price reduces the consumer's willingness to buy and at the same time increases the producer's willingness to provide.

We define the equilibrium price as the market price that exists where the quantity demanded equals the quantity supplied.

At equilibrium behavior of buyers and sellers coincides, in a market economy, people are free to make transactions: They are free to bid for goods and services at any price and free to offer those same goods and services at any price. When buyers seek the lowest price that producers are willing to accept and sellers seek the highest price that consumers are willing to pay, the transactions price that clears the market is the equilibrium price. The demand curves may be viewed as 'willingness-to-pay" curves; supply curves viewed as 'willingness-to-provide" curves.

Consumer Surplus

In free markets consumers do not pay more for a good than the subjective value they place on it. In fact, much of the time the value placed on an item exceeds its price. In those instances, when value exceeds price, consumers enjoy surplus value, or what is called consumer surplus.

Producer Surplus

Producer surplus is defined as the difference between the price that is received and the minimum price that producers are willing to accept.

Imperfect Competition

Although the incidence of monopoly is rare, the number of providers often falls far short of the perfectly competitive ideal. For example, many communities in many places are served by a single hospital. Many factors determine the strength of this monopoly status; among them are the relative ease of access to hospitals and the urgency of the services provided. Monopoly power leads to monopoly returns, or excess payments.

Other violations include entry restrictions that limit the number of providers that can practice in a particular area, in the form of certification requirements (compulsory license for physicians).

Supply-Side Imperfections

Imperfections on the supply side of the market allow providers to enjoy monopoly returns, lack of rivalry among firms.

The presence of a single firm in a market is referred to as monopoly. As the sole provider in a market, monopolists have market power ─ the ability to set a price. The more inelastic is the demand, the greater the market power.

Monopolists enjoy their special position in the market because for various reasons, rivals are prevented from competing effectively. Barriers to entry may be the result of cost advantages due to size, something economists call economies of scale. Whatever the source of the monopoly power, the result is a single provider serving a given market.

A more likely scenario is oligopoly, or the presence of a few firms in a market. The most important aspect of oligopolistic markets is the nature of the rivalry among firms. The pricing and output decisions of one firm depend on those of its rivals.

Firms is perfectly competitive markets, having no market power ─ they are price takers.

Demand-Side Imperfections

The classic case of demand-side imperfections is called monopsony ─ a single buyer. This situation emerges in medical care when consumers from into groups to consolidate their purchasing power and get lower prices from insurers and providers. The Canadian single-payer system is an example of a monopsony.

For many clinicians, allowing cost considerations into treatment decisions is morally repugnant. To counter this feeling, it is essential that practitioners have a knowledge of the fundamentals of economics to provide a foundation for understanding the issues that affect medical care delivery and policy.

People spending other people's money show little concern for how it is spent. People spending their own money spend it more wisely.

As concern over escalating costs grows, economics takes on an increasingly important role in the study of medical issues. Future clinicians must be well-grounded in economic theory. Only then can they help shape the debate on the future direction of medical care delivery.

MEDICAL CARE MARKETS

First of all, no one knows the ideal percentage of GDP that medical care spending should consume. We do know, however, that as income increases, spending on services, including health care, tend to increase. Wealthy countries spend proportionately more on medical care than poor countries.

Secondly, a growing economy allows more resources to be devoted to those areas of the service sector where productivity may lag (including medical care, education, police protection, and the performing arts). In an economy where productivity is growing in most sectors and declining in none, consumers can have more of everything. It is merely a matter of devoting a different proportion of income to the production of the various sectors (Baumol, 1993) **[28].** This reapportionment is accomplished by transferring resources from those sectors where productivity is increasing to those where it is stagnant.

Baumol refers to the phenomenon of lagging productivity in the service sector as the "cost disease of personal services." Applying his reasoning to medical care, the lag in productivity may be traced to two main factors. First, medical services are hard to standardize, making it difficult to automate. Before you can cure someone, it is necessary to diagnose the problem. Diagnosis and cure are done on a case-by-case basis. Thus, efficiency and productivity tends to lag behind the rest of the economy. Second, most people perceive that quality of care is positively correlated with the amount of time the physician spends with the patient. Thus, it is difficult to reduce the labor content of medical services. Physicians who speed up the examination process are often accused of

short-changing their patients. This same reasoning may also be applied to education, the performing arts, legal services, and insurance.

Finally, empirical evidence indicates that the increase in health care spending witnessed over the past 40 years provides substantial benefits to society that far outweigh the associated costs. Lichtenberg's (2002) **[29]** analysis strongly supports the hypothesis that medical innovation in the form of new drugs and overall health care spending contributed positively to increased longevity between 1960 and 1977. In fact, he concluded that the most cost-effective way to increase life expectancy is through increased spending on new drug development. Cutler and McClellan (2001) **[30]** examine the benefits of technological change in five common conditions: heart attacks, low-birth weight infants, depression, breast cancer, and cataracts. They conclude that health care spending on these conditions is worth the cost of care.

Medical Outcomes:

The area of concern is the health of the population. Those critical of the U.S. delivery system will cite the relatively poor health outcomes experienced in that country. The typical indicators used for comparisons are presented in **Table 3 and Table 4**. Male life expectancy at birth, 74.1, is the lowest among the six countries listed. Female life expectancy, also last among the six countries listed, is 79.5 years. Infant mortality rates are the highest in the United States, twice the Japanese rate. Spending, both as percentage of GDP and on a per capita basis, is much higher in the United States. In fact, per capita spending in Germany, ranked second, is less than 65 percent of U.S. spending. Using these indicators, it appears that we may not be getting value of the money being spent. Is

the U.S. system delivering an inferior product, or is there another way to look at the evidence?

Health indicators reflect more than health care delivery.

Country	Life Expectancy at Birth		Infant Mortality Rate	Health Care Spending (% of GDP)	Per Capita Health Care Spending
	Males	Females			
Canada	76.7	82.0	5.3	9.2	$2,397
France	75.2	82.7	4.6	9.3	2,387
Germany	74.7	80.7	4.4	10.6	2,780
Japan	77.7	84.6	3.2	7.6	1,984
Sweden	77.4	82.0	3.4	8.4	2,270
United Kingdom	75.7	80.2	5.6	7.3	1,813
United States	74.1	79.5	6.9	13.1	4,540

Table 3: Developed Countries Health Indicators .

State	Life Expectancy at Birth		Infant Mortality Rate
	Males	Females	
Kerala **[64]**	71.3	76.3	13
Tamil Nadu**[65]**	65.0	67.4	31
Karnataka**[66]**	63.1	67.4	45
A P**[67]**	62.7	65.0	52

Table 4: South India Health Indicators.

The Competitive Market Model*:*

Technical efficiency may be thought of as efficiency in production, or cost efficiency. In perfectly competitive markets, producers must minimize costs to maximize profits. Perfect competition guarantees both allocative and technical efficiency. Even in a world of equal opportunities, there will be different outcomes. Blaming the differences on unequal access ignores demographic differences such as age, education, and marital status between the two population cohorts. Additionally, differences in lifestyle choices are also important.

Market Failure

According to Murphy's Law, if anything can go wrong, it will go wrong. Various imperfections in medical markets make the dual task of delivering a product equitably and efficiently more difficult. When the underlying assumptions of competitive markets are not met, markets fail to deliver the **optimal output levels (**Rice, 1998) **[31].** Markets fail to allocate resources optimally when firms have market power, when there are externalities in consumption and production, and when the good produced is a public good.

Market Power

Any departure from perfect competition, whether it be monopoly, oligopoly, cartels, monopolistic competition, monopsony, or any other market structure imperfection, violates the optimality considerations. A profit-maximizing firms with market power sets prices at levels that exceed marginal costs. To maintain those prices, the firm must restrict output to levels that are less than optimum. Prices will be too high, costs too high, resources underutilized, and society will suffer an economic loss. When demand curves

are perfectly elastic, they are drawn as horizontal lines. Market power gives a firm some control over its pricing decisions. Competition will result in the exit of all but one firm. The remaining firm, the **natural monopoly,** will not set price competitively, and since P>MC, output is not provided at its optimal level. To correct this misallocation of resources, the most effective option may be regulation. Shielded from competition from rival firms, the monopolist has no compelling reason to be efficient. The firms will produce less than optimal level of output (Q_0) and prices will be higher than the market were competitive (P_0). To correct this problem, government price controllers often try to establish a maximum price the monopolist can charge that more closely approximates the perfectly competitive solution. Setting a price at P_1, for example, enables the firm to earn a normal return on its investment and produce at higher output levels (Q_1). The market power insulates a firm from the competitive forces that ensure allocative and technical efficiency, resulting in a loss to society.

Externalities

Sometimes the action taken by individuals in the process of producing or consuming will have an effect on the welfare of others. An externality may be either positive or negative, depending on whether it benefits or harms other people. By maintaining her property, a homeowner generates a positive externality for all her neighbours. Not only is it pleasing to look at a freshly painted house and well-kept garden, but the market values of surrounding properties are enhanced at the same time.

Examples of negative externalities abound. Anyone smoking a cigar in a crowded room imposes costs on everyone else in the room. A factory that dumps toxic waste into a nearby river shifts some of the cost of production (i.e. waste disposal) onto those people

who live downstream from the plant. By choosing to drive your own car to work, you impose costs on others in the form of carbon monoxide emissions from the exhaust. A large percentage of the costs of commuting are internalized. You pay for the care, the gasoline, and the insurance. But your fellow commuters pay the costs that cannot be internalized, namely the costs of the by-products of your commute: traffic congestion and air pollution.

Public Goods

Markets distribute goods efficiently when people spend their own money in order to enjoy the benefits of consumption. Nonexcludable and nonrival goods are called public goods. Once a strategic national defense system is operational, there is no way to exclude individuals from its protective umbrella simply because they refuse to pay their share of the costs.

Nonrivalry means more than one person can enjoy the benefits of consuming a commodity without affecting the enjoyment of the other. One person's consumption does not reduce the benefit received by someone else. If an air traffic control system is in place, the marginal cost of monitoring the flight path of an additional aircraft is zero. Serious efficiency problems arise when we attempt to provide nonexcludable goods through private markets. Those individuals who refuse to pay for a good while still enjoying the benefits of consumption are called free riders. Public television provides a good example of the free-rider problem. The number of people who watch public television far exceeds the number who subscribe. Of course, if some ride free, others

have to pay or no one rides at all. And that's the point. Private markets tend to undersupply nonexcludable goods.

Public provision of the good may be required. Governments can require individuals to participate in paying for goods through the power to tax.

Market Failure in Medical Markets

Is medical care a public good, nonexcludable in distribution and nonrival in consumption?

Traditional Sources of Market Failure

Although pure monopoly may be difficult to find, firms often engage in interdependent behavior to avoid competition, a form of oligopoly. Recognizing that it is in their collective interest not to engage in price competition, providers differentiate their products to make direct price comparisons difficult.

Externalities arise in medical care in a number of circumstances. The most obvious type of externality is associated with public health programs. Modern society can be a breeding ground for all sorts of communicable diseases. The ability of the Public Health Services to enforce health regulations and monitor contagious diseases serves to improve public health. Related activities include the provision of clean water, clean air, and adequate sewage disposal, which greatly reduce the incidence of diseases such as cholera and dysentery. In addition, immunization against mumps, measles, small pox, polio, and whooping cough offers protection for more than one individual. The incremental value to society is greater than the value to the individual alone. In a private market, fewer vaccinations would occur than is socially optimal and may call for collective action in the form of mandates or subsidies or both.

Many will argue that medical research should be treated as a public good and financed collectively through government. At least a portion of the benefits is translated into career enhancement opportunities and personal prestige. Some may choose to keep their findings out of the public domain in order to earn royalties or other payments and hence not public good.

Imperfections in Medical Markets

Other imperfections contribute to the failure of medical markets to provide the socially optimal level of service.

Imperfect Information

Lack of information presents serious problems in a market economy. In medical markets the problems that arise may be even more serious. Most patients are poorly informed about virtually every aspect of the medical transaction.

The overall lack of information available to patients is compounded by the difficulty in securing the information, measured in terms of time and expense. Patients also have little knowledge about price and quality differences among alternative providers. This imbalance of information between patient and provider, referred to as asymmetric information, had led to two important market defects.

1. First, patients are not able to judge price and quality differences among providers. As a result, providers can charge prices that are higher than the prevailing prices in the market.
2. The second problem may be described as an agency problem. The physician serves as the agent of the patient. The patient delegates most of the decision-making authority to the physician. The expectation, in turn, is that the patient's best interests will be the

top priority. The dual role of provider of services on the one hand and the agent in charge of information on the other creates a dilemma. The physician is in a position to induce the patient to purchase more medical care than is actually needed. Physicians can recommend not only medical care with little marginal value, medical care on the flat-of-the curve, but also medical care that may actually harm the patient.

Keep in mind that other markets also exhibit this information problem and are relatively competitive. The market for personal computers is a good example. Except for a small segment of the market, the general public is woefully ignorant of the differences between RAM and ROM, the number of meg in a gig, and the merits of the Pentium and Celeron processors. Even with all this consumer ignorance, the market for personal computers is extremely competitive. Why? Because an informed minority provided the initial market discipline. They wrote the newsletters, contributed to the magazines, and spent endless hours on the internet participating in forums and posting on bulletin boards. The demand for information fostered by this group created awareness among all consumers. Virtually all types of medical care, except emergency care, would be purchased in markets with enough informed consumers to ensure economic discipline.

Barriers to Entry

An important characteristic found in competitive markets is easy entry and easy exit of suppliers. Profits serve as a signal to prospective providers.

Entry barriers restrict resources movements and result in imperfect competition. Examples of barriers in medical markets are found in numerous restrictions.

1. Licensing

2. Certification of practitioners is the most common ways to restrict entry into the medical profession. The stated purpose of this policy is consumer protection.
3. **Certification of need (CON)** laws require hospitals to secure approval from government planning agencies before adding new capacity or investing in expensive equipment. CON legislation seeks to eliminate the duplication of costly programs within a service area. Restrictions may sound good in theory, but one of the unintended consequences of any limits placed on a market is the elimination of competition. Reduced competition leads to market power and market power leads to market failure.

Third-Party Payers

In traditional markets, individuals spending their own money provide the discipline that culminates in the efficient provision of goods and services. One of the main reasons medical markets are not efficient is that consumers do not spend their own money. Money is paid by third parties, primarily health insurance companies and the government. Therein lies the major problem in medical markets. Typically, pricing reflects the interaction of consumers' willingness to pay for goods and services and their ability to buy them. Medical markets regularly ignore the desires of those without insurance or the ability to pay for care out-of-pocket. The desires of those who have insurance are distorted by the subsidy provided by their insurance.

In competitive markets, providers are rewarded for offering more services at the lowest price. In cost-plus markets, providers are rewarded by offering more services at higher prices, passing on the additional costs to the third-party payers. Cost-plus

reimbursement by third-party payers provides an incentive for people to demand interventions that provide little benefit.

Government Intervention in Medical Markets

Government involvement in the medical marketplace is extensive. The involvement includes financing, direct provision, regulation, and subsidization.

Regulation

Price controls, entry restrictions covering both providers and hospitals, and regulations on the development and introduction of new drugs and medical devices are the major areas of regulatory control affecting the health care economy.

Price Controls

Physicians' fees were limited to usual, customary, and reasonable (UCR) charges. Under UCR, physicians could charge the minimum of a doctor's usual fee, defined by the median fee during the past year, and the customary fee, defined by the fees charged by other doctors in the area. The use of UCR resulted in a steady escalation of physicians' fees.

Medical prices continued to rise faster than the rate of overall inflation. As prices increased, spending increased. Efforts to limit spending growth shifted to the hospital sector with the introduction of prospective payment. Under prospective payment, hospitals were paid according to the expected cost of treating a particular patient based on diagnosis. If the actual cost of treatment was less than the payment, the hospital kept the surplus. If actual costs were greater, the hospital absorbed the loss or shifted the costs to other patients. Although average length of stay fell dramatically, the use of outpatient services increased dramatically.

Entry Restrictions

Although the stated purpose of these restrictions is consumer protection, some evidence exists that the self-interest of the providers may be the driving force behind the practice. Licensing attempts to limit the likelihood that incompetent providers will treat uninformed patients.

Limits on New Product Development

The time from the discovery of a promising chemical compound to drug approval averages 12 years. The cost to the public of a dangerous drug is obvious. The cost of delaying a beneficial drug is hidden.

Tax Policy

Policymakers and planners often use tax subsidies to encourage certain types of behaviour. (Those who do not qualify for them call these subsidies “loopholes”). Example, group health insurance has been a non-taxable benefit for employees and the same time a tax-deductible expense for employers.

One of the major consequences of this tax subsidy is that individuals demand more health insurance when it is purchased by their employers than if they had received the income and bought it themselves.

Government Failure

Few will question the intentions of government involvement in medical care. Everyone is in favour of improved access and lower costs. But careful consideration of the unintended consequences of government intervention is equally important. Choosing a health care strategy for yourself and your family is a difficult task. Choosing someone else to make that decision for you is not only difficult, it can be

dangerous. Transferring decision making from the private sector to the public sector substitutes bureaucratic discipline for economic discipline.

The notion of perfect competition in markets is just as rare as the notion of perfect democracy in political science. Criticism directed at market failure without at least admitting the possibility of government failure is dishonest, or at minimum naïve. Voters face considerable obstacles in getting their collective voices heard.

Frequently, solutions proposed by well-meaning government policymakers ignore the realities of the real world.

ECONOMIC EVALUATION IN HEALTH CARE

Every physician must decide if the improvement in a patient's health is worth the additional spending for a particular intervention. In society at large, health insurers and health plans must decide whether to cover a specific intervention or treatment. Government agencies must determine which drugs will be eligible for reimbursement through public programs. By considering costs and benefits, these decision makers are actually applying economic analysis to their particular situations.

Meaning of Economic Evaluation

Economic evaluation is a comparative analysis. There must be at least two alternatives or interventions under consideration to perform a comparative analysis. We typically do not compare an intervention or procedure to "do nothing" unless doing nothing is a reasonable option.

Types of Economic Evaluation

Cost-of-Illness Studies

The quantification of the economic burden of a specific disease provides information on the cost structure related to that disease for a specific population in a well-defined geographic area. Because there is no outcome measure, per se, a cost-of-illness study is not an economic evaluation in the strictest sense of the term. It does provide important information to policy makers and health economists on the burden of a disease. In that sense a cost-of illness study may be a first important step in cost identification leading to an economic evaluation.

Providers can use this type of analysis to guide medical decision making when the clinical effectiveness of treatment options is equivalent.

Cost-Benefit Analysis

Managers of for-profit firms must make decisions on how to allocate their firms' scarce resources among alternative investment projects. The financial analysis of alternative investment projects is known as capital budgeting. Public sector managers must make decisions on how to spend scarce tax rupees to maximize the public welfare.

A simple extension of the capital budgeting process is cost-benefit analysis. First developed to assist government agencies making decisions about the provision of public goods, cost-benefit analysis is an analytical technique comparing all the costs and all the benefits arising from a program or project. Thus, cost-benefit analysis is to the public not-for-profit sector what capital budgeting is to the private, for-profit sector.

Elements of a Cost-Benefit Analysis

Cost-benefit analysis is often used to justify expenditure on specific public sector projects. The ration of benefits to costs can be calculated and only those projects with a benefit-cost ration greater than or equal to 1.0 are accepted.

Valuing Benefits

Benefits are typically valued using the willingness-to-pay approach. An individual's willingness to pay for an improvement in health depends on four factors: wealth, life expectancy, current health status, and the possibility of substituting current consumption for future consumption (Bleichrodt and Quiggin 1999) [32]. Analysis may be viewed suspiciously because it will likely favour certain groups - the wealthy, the young, and those with serious health problems.

Cost-Effectiveness Analysis

If improving the health of a given population is the primary goal of health policy, then the preferred measure of health benefits may be the health outcomes themselves and not their rupee value. Cost-effectiveness (CE) analysis, is a way to quantify trade-offs between resources used and health outcomes achieved without having to value health outcomes in monetary terms – a prospect that appeals to many policy makers.

CE analysis provides a practical guide for choosing between programs when limited budgets do not allow decision makers to implement every program that might improve the health of the population.

Elements of a Cost-Effectiveness Analysis

Cost-effectiveness analysis related the cost of two or more treatment options to a single, common consequence that differs among options. The treatment options may be different treatments for the same conditions (e.g. life-saving treatment for heart disease compared to end stage renal failure). Cost-utility analysis, a special case of CE analysis, addresses quality of life concerns through the use of quality-adjusted life-years (QALYs).

Incremental Cost-Effectiveness Ratio (ICER):

When decision makers are faced with limited budgets, CE analysis provides a systematic methodology to achieve the best overall health benefit for a given population. When the most effective treatment option for a medical condition is also the least expensive, the choice is easy. The difficulty arises when the most effective treatment option is also more

expensive. Policy makers need an objective measure to help determine the preferred treatment option.

The measure provided by CE analysis is the incremental cost-effectiveness ration (ICER). The incremental cost-effectiveness ration provides a way to compare the differences in costs and effectiveness of two treatment options using the following formula:

$$ICER = \frac{C_B - C_A}{E_B - E_A}$$

where $C_{A,B}$ = Costs of treatment options A and B

$E_{A,B}$ = clinical effectiveness of treatment options A and B

When CE analysis is used in clinical decision making, the usual approach is to define the treatment option being studied (treatment B) and the alternative treatment option it is being compared with (treatment A). If $C_A > C_B$ and $E_A > E_B$, option A is both more costly and less effective. In this case we say that treatment option B dominates. If $C_A < C_B$ and $E_A < E_B$, option B is both more costly and less effective. In this case we say that treatment option A dominates. In both of these cases, further analysis is unnecessary, the most effective treatment option is also cheaper, and the choice is simple. If, however, $C_B > C_A$ and $E_B > E_A$, the choice is not as obvious, and a CE analysis is in order.

The ICER may be clearly depicted graphically as seen in **Figure 2**. The gain in effectiveness is plotted on the y-axis and the net present value of the total costs on the x-axis. With each treatment option represented by a point on the graph, it is easy to see that

the higher the point, the more the effective the treatment; and the farther to the right, the more expensive the treatment.

Using this graphical presentation, the ICER comparing the two treatment options is the inverse of the slope of the line between the two points A and B. a steeply sloped line indicates a low ICER, or in other words, a substantial improvement in health effects for a relatively small cost. As the slope gets flatter, the ICER increases, indicative of higher cost interventions relative to their effectiveness.

If a number of treatment option are being considered for the same medical problem, the graphical presentation clearly depicts the preferred strategies (Mark, 2002) [33]. Points A through G in **Figure 3** represent the costs and effects of seven options for the screening or treatment of a disease. The options that form the solid line (ABDFG) represent the economically rational subset of treatment options. Points that lie below the line, such as point C and E, represent treatment options that are dominated by those that are on the line.

As the slope of the line gets flatter, the ICER increases, providing a clear depiction of the theoretical construct called the flat-of-the-curve (Enthoven, 1980) [34].

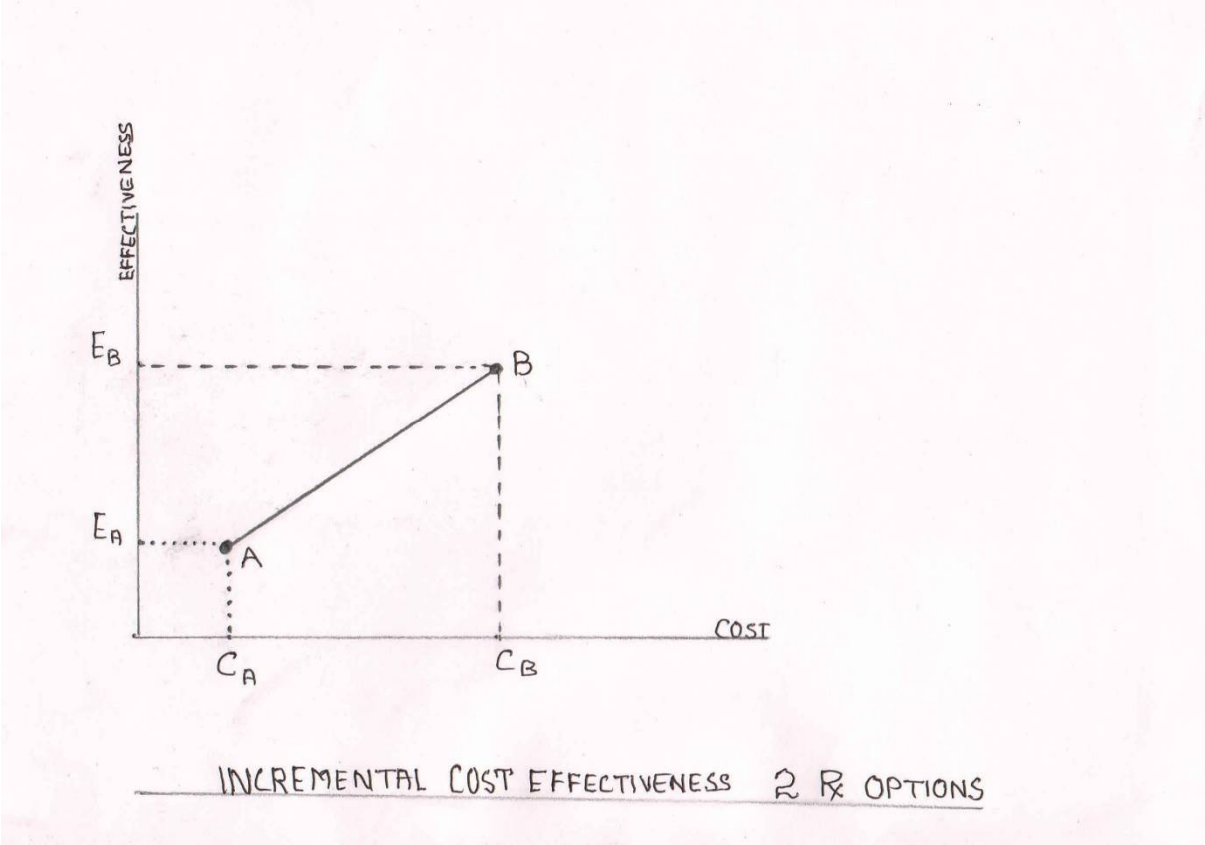

FIGURE 2: INCREMENTAL COST EFFECTIVENESS COMPARING TWO TREATMENT OPTIONS

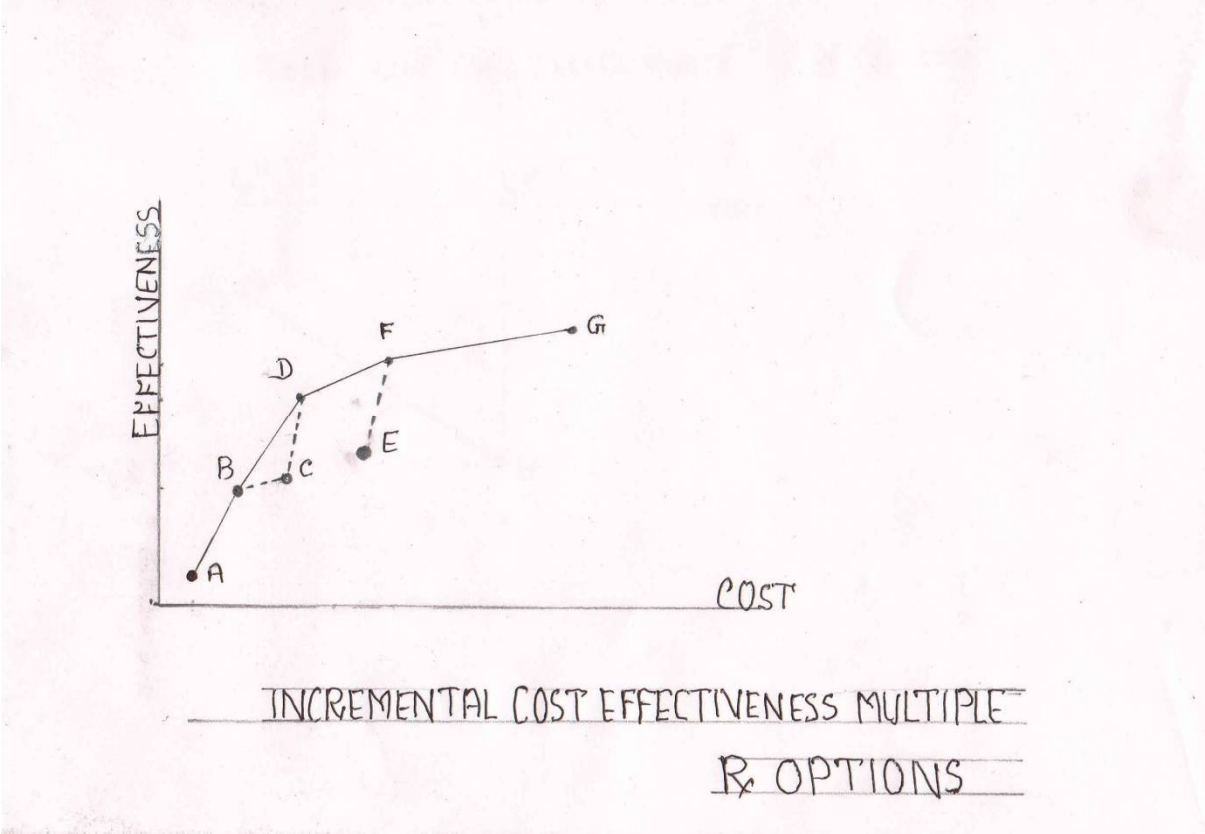

FIGURE 3: INCREMENTAL COST EFFECTIVENESS COMPARING MULTIPLE TREATMENT OPTIONS

Measuring Costs

The costs of the treatment are the opportunity cost of the resources used in providing the treatment minus the value of any resources saved due to the treatment. Direct medical costs associated with the use of medical resources. Hospitalization, outpatients visits, medical procedures, laboratory testing, pharmaceutical drugs, medical devices, and other medical services such as home care and nursing care. Direct nonmedical costs are those costs typically borne by the patients themselves and their families. These costs include transportation expenses, home services such as cleaning, cooking, shopping, and other personal maintenance services, and other nonmedical investments such as home remodelling to accommodate a physical handicap.

Indirect costs are the costs related to lost productivity. This includes sick leave, reduced productivity at work, and other productivity losses due to early retirement or premature death. Intangible costs are those costs associated with a diminished quality of life. These costs include pain and suffering, grief and anxiety, and disfigurement. Because these costs are difficult to measure, they are often ignored.

The effectiveness of a treatment is measured in terms of the improvement in health associated with it and may be expressed in terms of surrogate, intermediate, or final measures. Surrogate measures examine the clinical effect of a treatment option, or its clinical efficacy. Intermediate measures include clinical effectiveness. Final outcomes measure economic effectiveness and may be stated in terms of events avoided, infections cured, disease-free days, life years saved, or quality adjusted life years gained. Thus, final outcomes are preferably measured in terms of improvements in survival and quality of life.

Survival Measures

Even though survival may be stated in a number of different ways, for the purpose of economic evaluation, it is typically measured in terms of the number of years of life.

Quality-of-Life Measures

Quite often improvements in life expectancy do not fully capture the benefits of a medical intervention. Extending life can result in a decrease in the quality of life. Furthermore, an intervention may result in quality-of-life improvements without actually extending life. What is needed is a measure of effectiveness that captures improvements in the quality of life as well as extensions in the length of life. The quality adjusted life year, or QALY (Pronounced kwa-lee), serves such a purpose.

The concept of the QALY was first introduced in the study of chronic renal failure and has since become the quality-of-life measure choice in CE analysis. The measure simultaneously captures the value of reduced morbidity (improved quality of life) and reduced mortality (increased quantity of life). These quality weights are based on individual preferences for the various health states, measured on an interval scale anchored by death (equal to 0) and percent health (equal to 1).

Consider a 55-year-old male with type 2 (non-insulin-dependent) diabetes. Complications from type 2 diabetes include kidney disease, retinopathy, and damage to the nervous system that results in over one-half of all lower limb amputations in India. The risk of heart disease and stroke are two to four times greater for someone with diabetes. Normally a 55-year-old male could except to live additional 25 years; however, diabetes shortens life expectancy by an average of 10 years. Thus, a 55-year-old male can except to live to age 70. Based on individual preference, suppose our subject places a utility

value of 6 (15x0.4). Based on individual preferences, the total of living an additional 15 years with type 2 diabetes is the same as the total utility of living an additional 6 years in perfect health. Thus, this man would be indifferent between living 15 years with diabetes and 6 years in perfect health.

THE DEMAND FOR HEALTH:

Medical care is one of several factors that may be used to improve the health status of an individual or population. Other factors may be even more important in producing good health, including improvements in living standards, advances in medical research, changes in lifestyle, reductions in environmental pollution, and better nutrition.

Every person considers good health as the primary goal in life. Our day-to-day behaviour undermines the notion. Why do many people refuse to wear their seat belts? Why all the fuss about motorcycle helmets? Why do so many people still smoke cigarettes?

As we begin to think about the demand for health, our starting point will be the relationship between health and the factors that contribute to health. Within this framework, medical care is but one of many inputs that contribute to enhancing the health of the population. Two important questions will be addressed. What is the most efficient way to produce and distribute health? What is the contribution of medical care to the production of health?

The Production of Health:

People use medical care in combination with other inputs and their own time to produce good health. In much the same way, teachers' services, books, and an individual's own time are used to produce knowledge. As the amount of medical care spending increases, health status improves. The incremental change in health status declines, however, as more is spent on medical care. In other words, at low levels of overall medical spending, additional spending improves health status substantially. At higher levels of medical spending, the same increase in spending buys a smaller improvement in health status. The

economic principle is the law of eventually diminishing marginal returns, or more simply, the law of diminishing returns.

In economics, decisions are seldom made on all-or-none basis. It is almost always an issue of adjusting priorities, a little more of this and a little less of that. The use of the marginal product graph show how much extra health status can be purchased with increased outlay on medical care. Understanding this relationship is critical because most issues in health care relate to changes in the level of medical care provided. The relevant issues deal with marginal changes in utilization and spending, not overall utilization and spending.

Economists and policymakers use the information provided by the marginal product curve to make decisions on the allocation of scarce resources among competing alternatives, such as education, police protection, and economic infrastructure projects. The marginal product curve makes a clear distinction between the impact of medical care on total health status and its marginal contribution to health status.

Medical care spending is not the only thing that improves health. Other factors affecting health status such as lifestyle, environmental pollution, and technological developments, will shift the total product curve. For example, the presence and severity of respiratory problems are associated with high levels of air pollution. In many major metropolitan areas, automobile emissions are the single largest contributor to air pollution. The incidence of these health conditions will likely fall with reductions in automotive emissions. Also, better eating habits and increased exercise will also improve health status. At every level of medical spending, improving these other factors will result in better health.

Another way to look at the relationship is to view the production function as the maximum health status that can be achieved at a given level of medical care spending. At high levels of spending, even more spending on medical care does not buy much of an improvement in health status. Without spending any more money on medical care, however, better health status can be achieved with changes in lifestyle, such as losing weight, getting more exercise, and reducing stress.

More spending does not result in improvements in health, on the contrary it can result in iatrogenic disease i.e. net harm caused to a patient because of overuse of medical care.

A given level of health may be achieved using different combinations of the inputs. Of interest to economists and policy analysts is the most efficient way to combine the inputs to generate the maximum output possible. In this context, efficiency refers to economic efficiency, or that combination of inputs that minimizes the cost of producing a given level of health.

Measures of Health Status:

Everyone has his or her own opinion on what constitutes good health. It is critical that we develop a quantifiable measure of health status. No single measure can capture all of the aspects relating to life and the quality of life that are considered important. Studies in the production of health as life expectancy and mortality rates. Disability statistics, lost days due to illness, the incidence of high blood pressure, and other measures of morbidity have also been used as measures of health status including the quality-adjusted life-year.

Mortality:

One of the most common aggregate measures of health status is crude death rate for a given population, measured as the number of deaths per 100,000 populations. Overall,

unintended injuries were the leading cause of death for all age groups from 1 to 44 years. Cancer was the leading cause for those between 45 to 64 years of age, and for those over age 65 heart disease was the leading cause.

Other commonly used measures include male and female life expectancies at birth and infant mortality rates. A low crude death rate does not always indicate a healthy population.

Morbidity:

An alternative way to measure health status is to consider the prevalence of certain diseases or medical conditions. Arthropathies or other orthopaedic impairments are responsible for the most activity impairments, and more specifically back problems result in the most work days lost.

Using morbidity measures has one serious drawback. Since the observed relationship between medical care spending and the incidence of high blood pressure, for example, is negative, more medical care reduces the incidence of hypertension. Because of the negative relationship, health status must be defined as the absence of the specific condition.

Quality of Life:

Some may view measuring health status as a nice academic exercise, but it is a deadly serious proposition for health policy planners. Measure of quality of life popular among European policymakers called the quality-adjusted life-years, QALY. This measure of health status combines quality of life and survival duration into an index that is frequently used to evaluate programs and analyse clinical decisions especially in countries with

government-run systems on fixed budgets. The QALY provides a common unit of measurement that allows valid comparisons across alternative programs.

Possibly the most appropriate use of QALY analysis is the consideration of resources allocation within a single program. Setting priorities within the waiting list for kidney transplants provides a useful example. Members of the relevant population suffer from the same disease, end-stage renal disease (ESRD), and share the same disease-specific outcome measure.

Determinants of Health Status:

Medical care is not the only factor that contributes to the production of health. Others include income and education, environmental and lifestyle factors, and genetics. Research on the relationship between health status and medical care frequently has found that the marginal contribution of medical care to health status is rather small. Some argue that the current level of overall medical care spending, we are at the flat-of-the-curve (Enthoven, 1980) [34]**.** Any significant improvements in health status are more likely to originate from factors other than medic al care. The easiest way to improve health may be to shift the production function for health.

Income and Education:

The link between an individual's state of health and socioeconomic status may not be direct, but the theoretical underpinnings are obvious, income, education, and employment represent a level of social advancement that, to a large extent, determines access to medical care. In turn, improved access to care improves health. This association does not prove that low socioeconomic status causes poor health. It may be that low status is merely associated with the actual determinants of poor health. Other factors associated

with socioeconomic status that may provide a more direct link include nutrition, housing, environment, and even individual time preference.

Pappas et al (1993) [35] have examined mortality rates for Americans at various income levels. Their research shows that the 1986 death rates for Americans with income less than $9,000 were significantly higher than those for Americans earning more than $25,000. More importantly, these differences have widened since 1960. They concluded that socioeconomic status is a strong indicator of health status.

Guralnik et al. [36] have shown that one of the most important factors influencing good health and life expectancy is education (Independent of income levels).

Research represented by Grossman (1972) [37] and others assumes that individuals with more education are more efficient producers of good health. Education increases the ability to understand the importance of avoiding unhealthy behavior, the ability to communicate with health practitioners and understand instructions, and the ability to take advantage of the services available in the medical marketplace. By improving long-term opportunities, education increase the return on investing in health improvements.

Examining the relationship between income and health at the national level requires a completely different perspective. In comparisons of modern industrial nations, little correlation emerges between the level of national income and the various measures of health. When countries from the less developed world are included, however, a connection between income and health can be made. This connection is probably due to better public health measures as the level of development increases, including sanitary water and sewage systems, and immunization programs that reduce the spread of disease.

Environmental and Lifestyle Factors

Exposure to environmental factors, especially during infancy and childhood, can be linked to illness in children. Harmful chemicals, such as lead, mercury, and PCBs (polychlorinated biphenyls), are associated with poor fetal growth, poor growth during childhood, reduced intelligence (measured by IQ), small head circumference (associated with mental retardation), and decreased lung capacity (Shannon and Graef, 1992 [38]; Rogan et al., 1986 [39]; Needleman and Bellinger, 1990 [40]).

Regardless of the level of income and education, health status depends to a large degree on personal behavior. Lifestyle factors including diet, exercise, sexual behavior, cigarette smoking, substance abuse, and brushes with violence are important determinants of health status. The observed relationship between health status and socioeconomic status is interesting. But insufficient evidence prevents a determination of whether we are actually witnessing a link between socioeconomic status and health, or lifestyle behavior and health.

Genetic Factors:

Two factors play a critical role in determining the health of an individual; the risk of exposure to a particular disease and the ability of the individual to resist the disease (and recover from its consequence) once exposed. The former is the purview of public health; the latter is determined largely by genetics. Gene makeup is determined directly by patents. One receives 50 percent of genes from father and mother, 25 percent from grandparents, 25 percent from aunties and uncles. So, there is a chance that their genetic defects could surface in us.

Genetic research has focused on the mapping of the 100,000 plus genes in the human body with one of the goals being to determine the genes responsible for certain forms of inherited diseases. The inheritance of a particular gene greatly increases the risk of acquiring certain diseases. For example, women with a family history of ovarian cancer have a lifetime risk of developing the disease of about 40 percent compared with population risk of about 7 percent. Genes are associated with an increased incidence of colon, breast, uterine, and prostate cancers. Genetic factors may account for as much as 10 to 15 percent of all colorectal cancers and 5 to 10 percent of breast cancers.

A hereditary component is suspect in many different disorders. A strong family predisposition is a significant factor in allergies, hypertension, obesity, cystic fibrosis, sickle cell anemia, and even snoring. Heredity may also be linked to pancreatic cancer, certain melanomas, and even kidney and lung cancer.

Demand for Medical Care:

Medical Care as an Investment:

Stated in economic terms, medical care increases human capital (Fuchs, 1982 [41]; Mushkin, 1962) [42] . Resources used to improve health reduce current consumption with the expectation that future consumption will be increased. Individual willingness to invest in human capital improvement is determined by several factors, including the current cost, the size of the future payoff, the time span which the payoff is realized, and individual time preference. Individuals who are willing to invest in a college education are the same individuals who are willing to spend time and money on improving their health.

Demand for medical care is not based solely on the desire to feel better, but also on the desire to increase productivity. Within this framework, the demand for medical care has a consumption component and an investment component. People who invest in their health desire to have more healthy days available to produce income and leisure. This view incorporates the concept of the depreciation of health capital as one ages and the use of medical care to slow the process.

Factors Influencing Demand:

In economics, demand is defined in terms of the sacrifice an individual is willing to make in order to obtain a given amount of a particular good or service.

Patient Factors:

With medical care, as with any other commodity or service, consumers must decide among the available alternatives designed to satisfy their desires. For the demand relationship to have any economic meaning, patients must have money to spend on treatment alternatives and the ability to rank them in order of preference. Otherwise, patients are merely pawns in the game of medical resources allocation.

Substitutes in medical care are the alternative methods of treatment that leads to the same outcome. Natural childbirth results in a new born infant; so does caesarean delivery. Balloon angioplasty, along with stainless-steel stents, is one way to treat blocked coronary arteries; bypass graft surgery is another. Tennis elbow will improve in time with RICE (rest, ice, compression, and elevation); for those less patient, cortisone injections will also do the trick. Other examples include surgery performed on an outpatient instead of an inpatient basis; the use of the laparoscope for abdominal and knee surgeries; and lithotripsy instead of abdominal surgery to treat kidney stones. In most cases, the choice

of treatment alternative is not solely a physician decision. The desires of patients are also taken into consideration.

Health Status:

A patient seeking treatment for a medical condition typically initiates medical treatment. The patient's desire for treatment is often a response to an accident, injury, or other episode of illness. Thus, an individual's demand for medical treatment is usually triggered by the onset of an episode of illness.

The acute care model of medical treatment follows an expected pattern; a patient develops a medical condition (illness, injury, pregnancy, etc.), seeks out a physician, receives treatment, and either recovers or dies. Increasingly, a significant minority of patients does not fit the pattern. Their medical conditions do not go away. Instead of recovering or dying, they simply live on with a chronic medical problem.

Chronic illness, defined as a condition where a complete cure is not possible, has become a major factor in health care spending. In fact, chronic conditions begin to dominate medical care demand as a person ages. The incidence of Parkinson's, Alzheimer's, and other dementias increases as we age. Individuals who once died of heart attack or stroke in their 60's are living into their 80's only to experience the effects of a chronic illness. Arthritis, diabetes, asthma, and emphysema are growing problems among the elderly.

Demographic Characteristics

Individual and population demographics are also important determinants of medical care demand. First of all, a growing population will increase the demand for medical care. Even as the population grows, the family structure is changing dramatically, increasing the demands on the medical care sector. More single patients, more women in the labour

force, later marriages, fewer children per family, and greater mobility translate into fewer opportunities for direct family care and a greater reliance on medical providers.

As a person grows older, the stock of health capital begins to depreciate. Over the life cycle, people attempt to offset their depreciating stocks by increasing their spending on medical care.

Substantial differences are noted in medical care demand by sex (Sindelar, 1982) [43]. Early in the life cycle men and women spend approximately the same amounts on medical care. Later in life, especially during the childbearing years, women spend approximately 50 percent more than men. Men are more able to substitute home health care for hospital care, especially older men because they typically have a wife at home to take care of them. Older women, because they live longer than their husbands, are more likely to be living alone with no one at home to take care of them. Single individuals, regardless of age, are hospitalized more often than married persons.

With more women in the labor force, patterning themselves after their male counterparts, these differences in lifestyle factors are beginning to narrow. As women continue to act more like men, with higher rates of smoking, drinking, and stress, some medical experts suggest that they may one day start dying like men.

Economic Standing:

Income levels are highly correlated with educational levels. The association between income and education has fostered a huge body of economic research on the economic rewards of education called human capital theory.

Education improves a person’s ability to recognize early symptoms of medical problems when treatment is less expensive.

With its complex system of private and public insurance problems, many countries have developed a system of third-party insurance to spread the financial risk associated with sickness and injury. Third-party payers cover 80 percent of all medical care spending. Patients who are not directly responsible for their spending decisions tend to demand more medical care than they would otherwise purchase with their own money. Medical care that carries no out-of-pocket cost is treated as if it had no underlying resources cost. The result is moral hazard, demanding more than the social optimum.

Recognizing that health insurance acts to rotate the demand for medical care to the right, health insurance providers offer policies with features that serve to reduce moral hazard. The features typically include deductibles, coinsurances, and co-payments. The deductible is the initial amount the policyholder must pay before the insurance coverage begins paying. Coinsurance is the percentage of the total spending (beyond the deductible) the policyholder pays. A co-payment is fixed amount charged directly to the patient at the time of treatment.

Those who are fully insured are probably using more medical care than they really need. At the same time those who have no insurance are probably using less.

Insurance, to a degree, has distorted the medical market by creating a bias toward acute care instead of preventive care, (Weisbrod, 1991) [44].

Physician Factors:

Even though only 20 percent of all medical spending goes for physicians' services, physicians determine the vast majority of total spending. Physicians prescribe the drugs, admit patients into hospitals, and order the tests. Their influence on demand stems from the physicians' dual role as adviser to the patient and provider of services.

In medicine patients are relatively uninformed concerning alternative diagnoses and treatments. They are willing to trust physicians to make choices for them because of the difficulty in gathering and understanding medical information. But the physician's role as supplier can create a conflict of interest.

A physician's ability to induce demand is greatly enhanced when patients have a difficult time gathering and processing information. Given this unique position, physicians' can serve as imperfect agents, serving their own interests over those of their patients. In other words, they have the ability to influence their patients' demand for the services they personally provide. In theory, efficacy and cost guide a physician when faced with alternative treatment options for a particular disorder. If two treatments are equally effective, the physician can choose the cheaper alternative and save the patient money, or the more expensive alternative.

Standard economic analysis assumes that the demand and supply curves are independent of one another. A given increase in supply results in a new equilibrium reached by moving down a stationary demand curve. The equilibrium price falls and more output is purchased and supplied. Demand inducement posits, however, that a given exogenous shift in supply causes a shift in demand as providers advise their patients to buy more medical care.

The demand inducement hypothesis recognizes that physicians, rather than allow their incomes to fall, may recommend additional procedures, perform more surgeries, and schedule more follow-up visits – all increasing the demand for their services. Mechanisms that serve to support demand inducement include fee splitting and referral fees that provide a means for a referring physician to share in the service charges by

specialists and hospitals (Waldholz and Bogidanich, 1989) [45]. Another common practice is self-referral, where physicians have patients tested and treated in facilities where they have a financial interest. Physician ownership is prevalent in diagnostic imaging and testing laboratories.

The important issue is not whether physicians have the capability to induce demand, but whether they actually practice demand inducement.

As patients, payers, and lawmakers become more knowledgeable about medical practices and procedures, the phenomenon of demand inducement will likely become less of a concern.

Measuring Demand

Estimating Demand Functions

The unit of measurement may be the number of physicians' visits, the number of hospital admissions, the length of hospital stay, or total medical care spending, and variations in quality of services and intensity of services come into play.

Calculating Elasticities

Clearly, estimates indicate that demand for medical care is in most cases inelastic with respect to price.

Taking the empirical evidence as a whole, consumer demand seems to be relatively unresponsive to changes in the price of medical care. That does not mean that quality demanded does not change when price changes, only that the percentage change is quality demanded will be less than the percentage change in price. Based on the cited studies, a 10 percent increase in price will lead to small decrease in quantity demanded, anywhere from 1 to 7 percent.

Estimates of the income elasticity of demand for medical care vary considerably depending on whether the relationship being studied is the impact of individual income on personal medical expenditures or national income on aggregate medical expenditures. If this is true, medical care is, at least on the margin, a luxury or superior good. When income increases, demand increases and the percentages of income spent on luxury goods also increases. There is a bit of controversy, whether medical care is a necessity or a luxury good. Some argue it is a necessity. The income elasticity of demand for medical care is less than 1, making it is a necessity rather than a luxury good. Some argue it is a luxury good. A GDP-health expenditure of 1.43, indicate that when GDP increases by 1 percent, health expenditure increase by 1.43 percent, implying that medical care is a luxury good. In summary, medical care is a necessity at the individual level and a luxury at the national level. In other words, when individuals receive an increase in income, their demand for medical care changes little. Increase in aggregate income, on the other hand, may result in significant increases in medical care spending at the national level.

The Research And Development (RAND) Health Insurance Study

Most of the empirical research on the demand for medical care is based on non-experimental data. Typical of most social sciences research, non-experimental data may be either longitudinal or cross-section in nature, but it is always based on the actual historical experience of a sample of individuals or geographic regions. In contrast, experimental data is used in the physical sciences, such as chemistry, biology, and physics, where controlled experiments are possible. In a controlled experiment, individuals are randomly assigned to different groups, sometimes referred to as the control group and the experimental group. The use of data from a controlled experiment

estimates the self-selection bias inherent in non-experimental data. When individuals are free to choose their groups, at least part of the difference in outcomes is due to differences in tastes for different programs. Those individuals who expect to have higher medical care costs will usually select more generous health insurance policies.

The RAND Corporation, in the U.S. conducted the most extensive controlled experiment in health insurance from 1974 to 1982. Over that period, approximately 7,000 individuals were randomly placed into one of 14 separate insurance plans and one health maintenance organization. Some plans had deductibles and others did not. Co-payments ranged from 0 to 95 percent. Overall the results indicate that individual demand responds to cost sharing. Demand for those provided with free medical care was about 50 percent higher than demand for those who had to pay 95 percent of the total cost.

From these results it may be concluded that changes in out-of-pocket spending explain a small, but significant, portion of the overall change in medical care spending. Changes in deductibles and coinsurance can have an effect on the overall quantity of medical services demanded.

HEALTH INSURANCE:

National Health Insurance:

National health insurance (sometimes called **statutory health insurance)** is health insurance that insures national population for the costs of health care and usually is instituted as a program of health reform. It is enforced by law. It may be administered by the public sector, the private sector, or a combination of both. Funding mechanisms vary with the particular program and country. In some countries, such as Australia's Medical system or the UK's NHS, contributions to the NHI or SHI system are made via taxation. In practice of course, most people for NHI will join the insurance scheme. Where the NHI scheme involves a choice of multiple insurance funds, the rates of contributions may vary and the person has to choose which insurance fund to belong to. In the United States, the Patient Protection and Affordable Care Act includes a "health insurance mandate" that produces the same effect as NHI or SHI, though relies more heavily on the private market than their public sector than most countries.

Germany has the world's oldest national health insurance, through the world's oldest universal health care system, with origins dating back to Otto von Bismarck's social legislation, which included the Health Insurance Bill of 1883, Accident Insurance Bill of 1884, and Old Age and Disability Insurance Bill of 1889. In Britain, the National Insurance Act 1911 marked the first steps towards national health insurance, creation of the National Health Services in 1948, extended health care security to all legal residents. National healthcare insurance programs differ both in how the money is collected, and in how the services are provided. In countries such as Canada, payment is made by the government directly from tax revenue. In UK additional contribution is collected from all

workers, paid by employees and employers based on the level of salary paid. In both of these cases the collections are administered by government. In France a similar system of compulsory contributions is made, but the collection is administered by non-profit organisations set up for the purpose. In addition to direct medical costs, some national insurance plans provide compensation for loss of work due to ill-health, or any be part of wider social insurance plans covering things such as pensions, unemployment, occupational retraining, and financial support for students.

The Theory of Risk and Insurance:

The theory of risk and insurance is based on the pioneering work of **Friedman and Savage** in 1948 [46]. Individuals enter into insurance contracts to shift the uncertainty of financial risk to others. It is impossible to determine whether one particular individual will suffer from a medical condition, such as a heart attack or stroke. When individuals are combined into large enough groups, or risk pools, the probability that someone in the group will suffer heart attack or stroke can be estimated. The estimated probability of an event is based on the historical frequency of the event occurring in the past. The larger the group, the greater the accuracy of the prediction. Some individuals are more willing to take chances than others. But even people who willingly take chances generally prefer less risky situations. Most people try to avoid risk. The dominant attitude among the populations is risk aversion. Risk is costly and a risk-averse person will pay to avoid the consequences of the risk. To illustrate this principle, take the case of health insurance. An individual facing the uncertainty of an illness has two chances: (1) purchase insurance and voluntarily reduce wealth by the amount of the premium, or (2) self-insure facing the small probability of a financial loss should an illness occur. It is impossible to know the

actual probability that any one person will suffer from an illness. With a large population, the proportion of the population that suffered from the illness in a previous time period can be used to estimate the probability. The goal of insurance is to spread or pool the risk over a large group of people within the population. Risk pooling works as long as the group purchasing insurance has the same probability of illness as the entire population. In that case they are able to share the costs of treating the illness by collecting premiums from everyone and paying benefits to those who become ill. For this agreement to work, the insurance company must collect enough in premiums to pay out all claims, cover all operating and administrative costs, and have reasonable profits left over for the owners of the company. Several factors affect the decision to buy insurance. Individuals who are risk seekers or risk neutral will not buy insurance. The magnitude of the loss also plays a key role in the decision. When the range of uncertainty is large (i.e. when the potential financial loss is large relative to the actual level of income). The greater the expected loss, the greater the maximum value of the insurance and the higher the likelihood that the individual will purchase insurance. Price level of income also play important roles in determining whether or not insurance will be purchased.

Health Insurance and Market Failure:

The dominant feature in the medical marketplace is the reliance on the third-party payment mechanism. Just as insurance has shaped the market for medical care, the tax subsidy to insurance has shaped the market for health insurance. Thus, in addition to the traditional sources of market failure, this subsidy to health insurance provides a strong incentive for over consumption **(Pauly, 1986)** [47].

1. Consumer Information Problems:

The quality of information tends to be poor with most information passed from consumer to consumer by word-of-mouth with little formal advertising. Not only is medical information difficult to gather, it is also difficult to understand. A great deal of medical decision making is based on highly technical information. Physicians spend a great deal of time in medical school to learn how to interpret the technical data on which they base diagnosis and treatment. Patients are usually not equipped to make the same decisions. It is this dual role as provider and adviser that can potentially lead to abuse. Finally, the cost of poor decision making is often quite high.

2. The Economics of Moral Hazard:

The moral hazard problem arises when one party to a contract cannot monitor the other party's performance. After reaching an agreement on terms, one or both parties may engage in post-contractual opportunistic behaviour because private actions are hidden from view. If people were perfectly honest, writing contracts would be easy. But people are often opportunistic. People who are moral in most ways may still take advantage of situations when their behaviour cannot be monitored. By exploiting the imbalance of information existing between the two parties to the contract a person is engaging in economic opportunism-attempting to secure more utility than would be permitted or anticipated by a particular contract.

The fact that a person has insurance coverage increases expected medical care spending. Two aspects to moral hazard affect both patient and provider. Having insurance (1) increases likelihood of purchasing medical services and (2) induces higher spending in the event of an illness.(in practice, economists view moral hazard as one aspect of the law

of demand. Patients respond to lower net prices purchasing more. Providers recognize that demand for their services is price inelastic and thus charge higher prices and prescribe more services).

These information problems affect the structure of insurance contracts. The person with insurance recognizes that the service is “sale priced”. It is easy to understand how this happens. A person visiting a physician for a battery of diagnostic tests will behave differently if he has insurance coverage. A patient with full insurance coverage will ask about the benefits of the tests, the nature of the complications, and the amount of time required for the entire procedure. A physician with a fully insured patient will provide the tests knowing that the insurance company will pay the bill. Seldom will cost enter the discussion. On the other hand, the uninsured patient will ask about the cost of the tests, the cost of alternative tests, whether the tests are absolutely necessary, and the likely consequences if they are postponed or skipped completely. And the physician of a patient without insurance will take the patient’s financial situation into consideration when choosing which tests to run.

Studies by the RAND Corporation and others have shown that individuals who receive free care use more medical services than those who are required to pay a portion of the cost. It is widely understood that health insurance, by lowering the out-of-pocket cost of medical care to the individual, may increase the amount demanded. In other words, people demand more medical care when it is covered by insurance.

From a strictly economic perspective we can argue that the response of seeking more medical care when one has insurance than when one does not is a result of rational economic behaviour, not moral turpitude. The quality of medical care demanded by an

individual is a function of (1) tastes and preference for medical care, (2) income, (3) the extent of illness, and (4) the prices charged for medical services. The effect of insurance against medical care expenditures is to reduce the price paid by the individual from its positive market price to some lower price. Even if illness is a perfectly random event, the presence of medical insurance will alter the randomness of medical expenditures unless the demand for medical care is perfectly inelastic.

The presence of demand curves that are not perfectly inelastic implies that the individual will alter his or her desired expenditures for medical care when insurance is present. The individual who has insurance that covers all costs demands medical care as though it had a 0 price. If the demand for medical care has a price elasticity greater than 0, forcing individuals to purchase insurance will create inefficiencies. For an efficient solution, some form of price rationing at the point of service may be necessary; that is deductibles and coinsurance.

3. Adverse selection

Adverse selection arises because individuals have more information about expected medical expenditures than insurance companies. The ability of prospective insurance customers to conceal their true risks can result in some insurance groups having a disproportionate number of high users. This will lead to higher than average premiums for the group and create an incentive for low-risk individuals to drop out of the group in search of lower-cost coverage elsewhere.

4. Insurers' Response to Information Problems

Moral hazard and adverse selection are information problems. Both rise due to the inability of insurers to monitor customer use and identify prospective risk. Insurers

respond to the overspending associated with moral hazard by charging deductibles and coinsurance. The insurance deductible is a set amount of medical expense that must be paid by the insured patient before the insurance pays any part of the claim. Whether the deductible works to discourage spending depends on the prospects of total spending exceeding the deductible. In practice deductibles seem to have some depressing effect on spending when prospective expenses are below the deductible. Otherwise, they have little impact. Obviously, one way to increase the impact the deductible is to increase its size.

In most cases, the insured patient pays a fixed percentage of every claim. The typical coinsurance rate of 10 to 20 percent provides a measure of discipline to the cost-conscious patient. Higher coinsurance rates raise the marginal cost to the insured and serve to restrain use to some degree. The insurer's response to adverse selection is twofold. Insurance companies will only underwrite prospective risk. The insurer will try to determine the expected level of usage prior to entering into the contract. This risk rating of prospective customers is done either through the use of a questionnaire or a physical exam or a combination of the two. In addition, insurance companies will not provide insurance for known ailments. A pre-existing condition is associated with an extremely high probability of use (approaching utility). Without the ability to spread risk, the insurance premium would likely exceed the expected loss. Consumers experience no gain from joining such a risk pool and thus have little demand for this high-cost-insurance.

The failure of the market to provide opportunities for the chronically and congenitally ill to purchase insurance at average premiums should come as no surprise. The purpose of insurance is to share risk, not wealth. Policymakers, even those not interested in wealth

redistribution, have used market failure to justify the provision of social insurance as a safety net. Since the private insurance market cannot provide adequate insurance for those with pre-existing conditions, it seems reasonable that the government take on this responsibility by operating and subsidizing high-risk insurance pools.

Other policymakers justify the provision of social insurance because of the external costs associated with the uninsured (e.g., high-cost emergency room use, cost-shifting, social unrest). Social insurance makes a pooling solution possible. Low risks are required to support the risk pool through compulsory taxation or higher insurance premiums.

Self-Insurance:

As insurance premium rise, private-sector employers have increasingly looked to self-insurance as a means of reducing the cost of providing health insurance to their workers. Firms that self-insurer do not actually contract with an insurance company to assume the financial risk. Instead, they accept this responsibility internally by simply placing funds previously paid in insurance premiums into a reserve account to pay medical claims directly. Many self-insured firms arrange for commercial insurance companies to administer their plans.

Medical Insurance and Health Status:

Evidence from the RAND Health Insurance Experiment suggests that more generous health insurance benefits have little effect on health outcomes (Newhouse, 1993) [48]. Robert H. Brook (1991) [49] provides additional evidence that the absence of insurance does not reduce the health status of the average American. While the uninsured have only about two-thirds the number of physicians' visits per year as those with insurance and

about one-half the number of hospital days per year, these difference in utilization do not translate into significant difference in health status. There seems to be no relationship between health status and insurance status. These differences could be due to the fact that up to one third of the care provided to the insured is considered inappropriate or equivocal. In other words, the medical benefit does not exceed the medical risk.

CO-INSURANCE AND RAND HEALTH INSURANCE STUDY:

RAND is a non-profit institution, established in the US to improve public policy through research and publication. It is inter disciplinary in nature. In the early 1990's financing and the impact of cost sharing took centre stage in the US health care debate. At that time the debate focussed on free, universal health care and whether the benefits could justify the costs. The co-insurance amount is borne by the individual. A central question for designing health insurance plans is : how large should such a co-insurance amount be? This question has been an important source of debate among both academics and health policy-makers.

With no co-insurance costs, patients have no financial disincentive to forgo care, even if it is of dubious value; but once patients bear some of the economic costs of receiving medical care, they are more likely to use only those health services that are worth the additional cost that they must pay. On the other hand co-insurance amounts that rate too high can lead individuals to avoid medical care which is actually necessary to their health and/or impose a substantial financial burden, very high levels of co-insurance may undermine one of the primary reasons that people insure themselves in the first place - which is protection from financial ruin if they become seriously ill. Moreover, high co-insurance amounts place a financial burden on the poorest and sickest members of the society. Evaluating this trade-off requires several questions. First, to what extent do the higher patient co-insurance charges reduce use of medical care? Second, to what extent is that reduction harmful in terms of personal health?

To obtain answers to these questions, researchers typically turn to the results of one of the most ambitious and important social experiments in U.S history, the RAND Health Insurance Experiment (HIE). In the 1970s, the HIE randomly assigned several thousand families to insurance with varying levels of patient co-insurance, and then followed them over a five-year period to evaluate the effect on their medical utilization and health. The results of that study are still the gold standard for evaluating the answers to these questions. Yet these results are often misinterpreted to serve the interest of both the sides in the health care debate. Those who favour more patient cost sharing highlight the conclusion from the HIE that for the typical person, co-insurance in a health plan did not adversely impact health. Those who favour less patient cost-sharing highlight the fact for some populations, particularly low-income and less healthy individuals, there were large negative impacts in health from introducing co-insurance. The goal is to cut through these conflicting interpretations of the RAND HIE to provide a comprehensive overview of what we learned from this ambitious social experiment. It appeared that low co-insurance caused more medical utilization and worse health.

The RAND HIE was a large-scale, randomized experiment conducted between 1971 and 1982. For the study, RAND recruited 2,750 families encompassing more than 7,700 individuals, all of whom were under the age of 65. They were chosen from six sites across the United States to provide a regional and urban/rural balance. One type of free care; to other three types involved varying levels of cost sharing – 25 percent, 50 percent or 95 percent co-insurance. The fifth type of health insurance plan was a non-profit, HMO style group cooperative. Those assigned to the HMO received their care free of charge. For poorer in the plans that involved cost sharing, the amount of cost sharing was

income – adjusted or at $1,000 annually, whichever was lower. The upper age limit for the adults at the time of enrollment was 61, so that no participants would become eligible for Medicare before the experiment ended. The consumers in the HMO – style cooperative had 39 percent fewer hospital admissions than consumers with free care in the fee-for-service system, but they had similar use of outpatient services.

One striking findings emerged: cost sharing did not significantly affect the quality of care received by participants. Cost sharing can be adapted to help achieve fundamental goals: containing costs and reducing wastes without damaging health or quality of care. Cost sharing and managed care allows us to exploit cost sharing's benefits (reduced costs and unnecessary care), while avoiding its negatives (reduction in needed care). The study suggested that cost sharing should be minimal for the poor.

MANAGED CARE

Managed care is a term used to describe any number of contractual arrangements that integrate the financing and delivering of medical care. Purchasers (usually employers) contract with a select group of providers to deliver a specific package of medical benefits at a predetermined price.

Many physicians are opposed to the concept of prepaid medical care, call it “contract medicine”.

Managed care has many of the aspects of the familiar all-you-can-eat-buffet – a single price, paid in advance, good for everything on the menu, just as the buffet must price its product based on the expected behavior of would-be diners, managed care must be sure that its pricing is sufficient to cover all the medical needs of its enrollees. One way the buffet can guarantee the “right” price is by offering plenty of the low-cost basics and limiting the availability of expensive entrees. Similarly, a successful pricing strategy in managed care must provide easy access to low-cost primary and preventive care as a way to discourage the use of expensive services including speciality care and hospitalization.

Enlisting the services of a buffet supervisor (a gatekeeper) to steer diners to the cheaper alternatives and limit access to expensive entrees may not be harmful to most consumers. In the case of the buffet, a diet of soup and salad may be healthier than red meat and potatoes in the long run. But those diners accustomed to meat and potatoes will find the transition painful. And those with special dietary needs may actually end up worse off if their choices are limited.

Traditional fee-for-service medicine financed through indemnity insurance is like dining with a group of co-workers on a business trip. Instead of ordering from the menu and paying separately, one member of the group agrees to pay the bill using her expense account. In other words, the boss is now paying for the meal and individual accountability is virtually non-existent. In this situation, the incentive structure encourages overeating. We tend to be more extravagant when someone else pays the bill. In other words, we seldom practice economizing behaviour when someone else will benefit from our prudent actions.

In the strictest sense of the term, managed care refers to any health plan that directs its enrollees to a panel of providers who have agreed to follow established guidelines to control utilization and cost. In the broadest sense of the term, it attempts to monitor and direct the use of health services, thereby reducing health care costs. In either case, the goal is to manage utilization to varying degrees by controlling both the patient and provider sides of the market.

The Theory of Managed Care Cost Saving :

The theoretical underpinnings of managed care suggest that medical care costs and spending may be affected by changing patient utilization, physicians' practice styles, and the introduction of new technology. Managed care arrangements are similar to traditional indemnity health insurance in many ways. A premium is charged to cover a prescribed set of medical benefits. Both use demand-side cost-sharing provisions, such as deductibles and coinsurance, to reduce moral hazard. In addition, managed care utilizes a combination of provider-side provisions to control moral hazard and spending associated with it. These provider-side provisions include (1) selection of providers, (2) cost-sharing arrangements, and (3) practice guidelines and utilizations review.

Evidence of Managed Care Cost Savings:

All forms of managed care had lower average premiums than traditional indemnity insurance. Luft (1981) [50] conducted one of the earliest studies on HMO utilization. He concluded that managed care plans had 10 to 40 percent lower costs per enrollees than conventional health plans. Although HMO enrollees experienced as many ambulatory visits, they had 25 to 45 percent fewer hospital days per capita.The most extensive study of the cost-saving potential of health maintenance organizations was the RAND Health Insurance experiment (Manning et al. 1984) [51]. This study avoided selection bias by randomly assigning individuals to a staff-model HMO or to one of several indemnity plans. The results of this study confirm the cost-savings potential of managed care. The HMO had per capita costs that were 28 percent lower than the indemnity plan. This difference was due largely to 40 percent fewer hospital admissions and shorter hospital stays.

Miller and Luft (1994, 1997) [52] analysed the most recent literature comparing HMO and fee-for-service costs. Their findings suggest that HMOs provide care comparable to traditional fee-for-service care at costs that are 10 to 15 percent lower. Cost savings are due to shorter hospital stays, fewer tests, and the use of less costly medical procedures. HMOs are able to accomplish these savings in spite of higher rates of physician office visits and more comprehensive benefits packages than fee-for-services plans.

Differences between Managed Care and Fee-for-Service Care in Quality of Care

Another issue explored by the emperical literature is whether there are quality differences between managed care and traditional fee-for-service care. Building on their earlier research, Miller and Luft (1997) [52] summarized the research on the relationship between the type of plan and quality of care. In their review of 15 studies comparing quality of care, they found equal numbers of statistically positive and negative effects of managed care on quality. Four studies found significantly better quality in managed care and four found worse. The others found insignificant differences or were inconclusive. Robinson (2000) [53] reviewed 24 studies, mostly from the 1988-1995 period. The overall patterns identified by these studies suggested lower levels of utilization for managed care plans. In most cases managed care had fewer hospitalizations, shorter hospital stays, and lower levels of discretionary services. Another important difference was the relative emphasis on preventive care as evidenced by more diagnostic screening and testing among managed care plans. Once again Robinson found little conclusive evidence that managed care quality was lower than that found in fee-for-service.

TECHNOLOGY IN MEDICINE

New technology are praised for their live-savings benefits and criticized for their high price tags. Many analysts believe that advances in technology are responsible for much of the growth in medicine expenditures (Evans, 1983 [54]; Newhouse, 1992) [55]. Improvements in the quality of care often have the simultaneous result of increasing the cost of care – in other words, as health status improves, financial status deteriorates. Worldwide expenditures on medical R&D are forecast to reach $60 billions in near future.

The Economics of Technological Change

Neoclassical economics loosely defines technological change as any invention, innovation, or diffusion of knowledge that improves products or processes. Technological change usually has cost quality implications and is typically measured in terms of increased productivity or economic growth. In most cases, we think of technological change in terms of process innovation that lowers the cost of producing an existing product or service. Often, technological improvements in medicine result in better outcomes for patients. Sophisticated technology often comes with a higher price tag. This is cost-increasing technology change.

Has innovation in medicine been cost-decreasing or cost-increasing? Advances in treating the common, everyday problems such as ear infections in children, simple fractures, and pulmonary infections seem to be cost-decreasing. In contrast, changes in the way more complicated problems are treated, such as heart attacks and breast cancer, tend to increase costs substantially.

The Levels of Technology

Progress in medicine may be categorized according to three levels of technology; non-technology, halfway technology, and high technology (Thomas, 1975 [56]; Weisbrod, 1991) [57]. Nontechnology helping patients cope with illness that have no known cure. Halfway technology represents the next level of medical progress, practitioners treat patients, by trying to postpone its ill effects. Surgery, radiation treatment, and chemotherapy are halfway technologies directed at established cancer cells. Organ transplantation in the case of end-stage renal disease (ESRD) and the various drug combinations used in the treatment of AIDS are two treatments that fall into this category. Finally, high technology becomes available when scientists understand the disease mechanism and develop treatments that either prevent or cure the malady. High technology constitutes a shift in attention from the consequences of a disease to its causes. Immunizations for protecting individuals against contracting a disease and antibiotics for the treatment of bacterial infections are examples of high technology. No high technology alternative has been established for the treatment of cancer, heart disease, or AIDS, contributing to the high cost of treatment in each case. Cost associated with any particular disease increase as treatment moves from nontechnology and then decrease as high technology is introduced.

Example: Treatment for polio. In the nontechnology state, victims of the disease died quickly of paralysis. There was little that medical science could do about the progression of the disease and costs were minimal. Science soon developed the halfway technology of the iron lung that prolonged life, but did nothing about the disease. Overall spending was much higher at this stage of technology. Finally, the introduction of the Salk and Sabin

vaccines virtually eliminated polio and dramatically reduced the costs associated with the disease.

Growing evidence indicates that the dynamic process of technological change in medicine has been concentrated at the level of halfway technology. The result is that technological change in health care has tended to be cost-increasing, especially with respect to many surgical and diagnostic procedures. Overall, expenditures increase as the technology improves and its use expands to include ever more complex cases.

The Role of Insurance in the Diffusion of Technology

It encouraged the expansion of costly technology, even in cases where medical outcomes were only marginally improved. The increased availability of insurance has led to the widespread availability of medical technology and improved the prospects for additional profits to those developing even costlier treatments. Only recently has the incentive structure tilted away from encouraging cost-increasing halfway technology towards encouraging potentially cost-saving high technology.

MEDICAL INSURANCE IN INDIA

History: Employee State Insurance Scheme (ESIS) was started in 1952. Central Government Health Scheme (CGHS) was started in 1954. Mediclaim- Voluntary Health Insurance started in 1986. Privatisation of health insurance began in the year 1999. Yeshasvini Health Insurance (Karnataka) started in the year 2003. Rajiv Aarogyasri Scheme (RAS) started in AP in 2007. Rashtriya Swasthya Bima Yojana (RSBY) started in the year 2008, Kalaignar Health Insurance (Tamilnadu) started in the year 2009. Vajpayee Aarogyasri Scheme (Karnataka) started in the year 2010. RSBY Plus (Himachal Pradesh) started in 2010.

Breadth of coverage is denoted by the percentage of population covered by the scheme. Up to 2007 only 7.5 crore Indians are covered. From 2007 to 2010, 24.7 crore Indians i.e roughly $1/4^{th}$ of India's population. Depth of coverage relates to the extent of benefit packages offered in the scheme, unfortunately except ESIS and CGHS all other schemes provide only hospitalization cover. The height of coverage indicates the share of health care costs to pre-payment and risk pooling. Unfortunately the state schemes like RAS ignore primary and secondary care completely. RAS covers only the high-end, low-frequency and rare diseases.

Insurance lead to high tertiary care spending and distorted priorities, the overall spending in the country on tertiary care works out to around 37% which is bad. In fact, states like Delhi, AP and TN are spending more than 50% of all government health expenditure on tertiary care which is worst. This is clear pointer to the direction of priorities, where governments have appeared to fall prey to a distorted consumer demand, misguided medical profession and the medico-industrial complex.

UK, Cuba and Sri Lanka have a tax based financing mechanism. Social health insurance is in Germany, France and Mexico. The problem is with low income countries like India. Wagstaff and Lindelow (2008) [58] reported that insurance appears to encourage people to seek more care from the expensive tertiary care providers, side tracking primary care providers in the process. Further, it is also confirmed by Wagstaff et al (2009) [59] who showed that both outpatient and inpatient expenses of households have gone up considerably post-insurance.

In early 1990s, the government opened up the insurance sector to private sector participation. While National Rural Health Mission (NRHM) attempts to ensure universal coverage through the tax based route, the RSBY provide financial risk protection to the underprivileged through insurance mechanisms.

ESI scheme covers all employers with more than 10 employees in notified areas. The employees who earn less than rupees 15,000 per month and their dependents are covered. On the other hand CGHS covers employed population in the formal sector. It covers all central government employees. Interestingly 38% of CGHS card holders are in Delhi and they consume 57% of CGHS budget.

CGHS is financed mainly with Central Government tax revenue(95%) while the beneficiaries pay rupees 50 to 500 per month as premium which accounts to roughly 5% of total expenditure. The average premium rates, depending on the grade varies from Rs.600-6000 per family per year. In case of ESIS, revenue is generated from beneficiaries (1.75% of their salary), employers (4.75% of the beneficiary's salary). The state government bears 12.5% of the expenditure. The average premium in ESIS is Rs 2,340-11,700 per family per year. Both CGHS and ESIS covers all preventive, primary,

secondary and tertiary cares. They also cover inpatient, outpatient, Ayush, maternity and all chronic diseases. In RSBY scheme centre contributes 75% and state 25%, premium is Rs 440-750. RSBY covers chronic diseases, inpatient admissions and maternity also.

RAS of AP is 100% state scheme the premium is Rs 267. The scheme covers only certain rare diseases and inpatients only. VAS (Vajpayee Aarogyasri) of Karnataka is 100% state scheme the premium is Rs 469 the scheme covers certain chronic diseases and inpatients only. Kalaignar, Tamilnadu is 100% state scheme covering only certain chronic diseases and inpatients. In Yeshaswini of Tamilnadu the state contributes 40% and the rest by the corporative. The premium is Rs.150, Yeshaswini covers both above poverty line and below poverty line people also.

Health Scheme package and benefits:

The basic question while designing a benefit package for the health insurance scheme is that of – what health conditions should be covered by the scheme. Most of the latest state government sponsored schemes cover inpatients tertiary care. While this helps poor households tide over catastrophic health events, the large share of out-of-pocket payments occur in outpatient visits. So, these schemes already have limited effectiveness in providing financial protection to the households. Preventive/Wellness and Ambulatory services are also not covered. Primary care is not in any of the schemes for various reasons. The CGHS and ESIS are the only schemes that provide coverage including outpatient care, preventive/wellness care and hospitalization. In case of government schemes for the poor, the schemes are designed to be entirely cashless to the patients. However, there have been reported cases of Out-Of-Packet expense by patients. For example, in a survey conducted in Andhra Pradesh. 58% of the Rajiv Aarogyasri (IIPH,

2009) patients reported having incurred OOP expense with an average Rs. 3,600 per patient.

Provision of Care by Private Hospitals:

In RAS scheme more private hospitals (71%) are networked by the scheme than the public hospitals (29%). The 71% of the networked private hospitals claimed 82% of the total claims. While the remaining total claim amount (18%) went to the public hospitals. In VAS scheme of Karnataka 95% of the networked hospitals are private and only 5% are public hospitals. Hospital wise claims data points towards trend in government schemes titling the funds to the already flourishing private sector while the public sector is starved for funds, there is a need to control this trend and the government should ensure that funds flow to the public as well the private sector, where they are most needed. The funds also need to flow to Tier II and Tier III cities apart from metros. This is possible through health insurance scheme intervention by graded incentive system.

Package rates for similar procedures:

Hysterectomy (Removal of Uterus) CGHS and ESIS Rs.13,000. RAS of AP Rs.40,000, Kalaignar of TN RS.25,000, Yeshaswini of KN Rs.6,000, RSBY Rs.10,000. Note: After various reports of malpractices by various private hospitals, in order to reduce the number of unwanted hysterectomies package amount of Rs.40,000 is reduced to Rs.30,000 in the year 2008 **(Appendices 1),** which is again reduced to Rs.20,000 in the year 2010.

Cholecystectomy (Removal of Gall bladder) CGHS and ESIS Rs.10,200, Kalaigna TN Rs.25,000, Yeshaswini KN Rs.9,000, RSBY Rs.10,000, RAS of AP Rs. 35,000. After noticing unprecedented rise in number of Cholecystectmies by private hospitals in AP,

the RAS scheme has reduced the package amount to Rs.30,000 in the year 2008**,** which is again reduced to Rs.20,000 in the year 2010.

Appendicectomy (Removal of Appendix) CGHS and ESIS Rs.12,000 Yeshaswini Rs.9,000 RSBY rs.6,000. RAS of AP Rs.25,000. After noticing unprecedented rise in number of appendectomies by private hospitals in AP, the RAS scheme has reduced the package amount to Rs.22,000 **(Appendices 2),** which is again reduced to Rs.18,000 in the year 2010.

The variation is more than double between various schemes for the same surgery. There is no explanation.

Enrolment Process:

In RSBY, RAS of AP, both schemes in Karnataka, and in newly launched schemes in Himachal Pradesh and Delhi the enrolment is for one year period. The kalaignar scheme enrolment is for four years. For ESI it is till the person is working in formal sector and even after retirement he can avail services by paying one time life premium. For CGHS the enrolment is for a period of five years, however, the beneficiary automatically gets re enrolled after a period of five years.

Missing focus on quality:

Several of the health insurance schemes suffer from poor monitoring. Little or no data collection on patient safety and quality processes, no quality reporting requirements, focus on structures and staffing for empanelment, little follow-up unless someone complains, and no incentives for quality performance, all these aspects of health insurance schemes point towards the fact that there is poor or missing focus on quality.

At present, the lack of robust backend infrastructure that can provide quality care either in the private or public sector in underserved areas makes the effectiveness of insurance schemes questionable. The tilting balance towards private sector in the network hospital raises concerns regarding the health of the public sector that is underfunded and remains so even in the event of government's policy to raise public expenditure on healthcare via health insurance for the poor.

There is no regulatory body subjecting the Trust and providers to any insurance specific regulation. An external regulatory body that not only regulates the insurer but also the Trust and conduct of Aarogyasri network hospitals is required to check for any collusion or corruption activities. All stakeholders the insurer, the Aarogyamithras and the providers of care seem to be under the influence of the Aarogyasri Trust. This seriously restricts their freedom to act with independence. The Trust should appoint independent Technical Experts who will not only bring their expertise but also the missing independence and integrity to the scheme's implementation and design.

The Aarogyasri scheme is managed through a contract with the private company Star Health and Allied Insurance, for which the state governments lack of transparency in the negotiation process. Although the trust allows access to utilization data, it does not provide and details of financial performance. It is hard to get information on the flow of funds, financial reserves, salaries and wages and other such details.

Moral Hazard:

The demand for medical care is both unpredictable and irregular. The uniqueness of these features that underlie market failure in health care produces enormous complexity leading to moral hazard, adverse selection and fraud in the public health arena. Moral hazard

occurs when an insured demands excess treatment or over utilises facilities. Moral hazard may also encourage an insured to incur less on preventive care. One of the triggers of moral hazard is the high – cost treatment expenditure is expected to significantly and rapidly rise due to strong incentive to demand & consume health care, in excess of what is medically considered an optimum treatment.

However, moral hazard can be a trigger on both demand – side as well on the supply – side as well. Presence of asymmetric information between principal and agent (agency relationship) provides opportunity for the patients, the providers and the insurers to maximise individual gain in the health care market. While the patient have the incentive to indulge in excess demand, the providers, on the other hand, have much bigger advantage over the patients given the mystification of health care and the associated treatment. And therefore, the supplier – induced demand will result in providers indulging in providing unnecessary and expensive care. In other cases it may lead to increasing levels of inappropriate care, unnecessary treatment, excessive laboratory tests or overcharging. Changing incentives either on the demand side or on the supply side may reduce this moral hazard.

Adverse selection, on the other hand, occurs when high – risk individuals tend to get insurance cover when they get ill or those individuals with potential risk of getting sick while low – risk individuals avoid getting insurance cover. Due to information asymmetry and pooling of unequal risks, high – risk individuals would tend to buy insurance. The problem of adverse selection seems be more of an issue with the commercial health insurance and community health insurance schemes, The evidence says that the tremendous variations in terms of claims submitted annually for inpatient

care in community health insurance schemes, ranging from 1.4 per 1,000 insured per year to more than 240 per 1,000 insured per can be explained by Adverse selection. ACCORD community health insurance scheme manages the problem of adverse selection by encouraging the family to enroll as a unit and by having a definite collection period. Other simple measures used to manage adverse selection are mandatory enrolment and waiting period after enrolment.

Since majority of sponsored schemes have government as the major agency, and negligible or no contributions from the beneficiary, adverse selection does not seem to be much of an issue. But as these schemes expand and contributions from beneficiaries increase, adverse selection will be a concern.

Hospitalization Patterns Under Various Schemes:

Andhra Pradesh's Rajiv Aarogyasri and Tamil Nadu's Kalaignar, the hospitalisation rates appear quite lower. This is due to the face that Andhra Pradesh and Tamil Nadu model providers high – end, low frequency and rare diseases, while RSBY provider's largely secondary care of high frequency and common diseases. On the other end of the spectrum, is voluntary private health insurance model, which seeks to cover both secondary and tertiary care hospitalisation. Oncology and cardiovascular disease account for major share of hospitalisation across most schemes. For eg. The percentage claims of cardiological care are as high as 16% in AP (Rajiv Aarogyasri), 11% in TN (Kalaignar) and 88% under Vajapayee Aarogyasri in Karnataka (initial period utilisation data). Oncology accounts for 20% cases in AP (Rajiv Aarogyasri), and 21% in TN (kalaignar). On the other hand, infectious diseases that account for maximum morbidity in India, accounts for an insignificant number of cases. Under commercial health insurance the

trend is little different, where 8% claims are of cardiac diseases, 4% for oncology and 12% claims are for infectious diseases.

Expenditure Pattern under Different Programs:

The actual value of hospitalisation would serve to show the extent of moral hazard .Data emerging from various schemes provide mixed evidence about average expenditure per hospitalisation. The average of hospitalisation expenses of uninsured in India are about Rs. 8,851 (Rs.11,553 in Private and 3,877 in government hospitals) during 2004. Mean hospitalisation expenses of the private health insurance industry at Rs. 19,637 per annum. Even after factoring in medical inflation, hospitalisation under private health insurance is almost twice expensive than expenditure incurred by the uninsured. The expenses under medical insurance scheme are certainly higher than the average hospitalisation expenses for uninsured population. Mean hospitalisation expense under Rajiv Aarogyasri has an annual hospitalisation expense of Rs. 27,848 Per episode. This is four times higher than what an uninsured would have paid and more than what the insured would have paid under private health insurance. The problem of moral hazard appears to be sweeping of these publicly funded privately provided insurance schemes. Whether it is Andhra's Aarogyasri or Tamil Nadu's Kalaignar or the CGHS scheme, which is essentially publicly – funded but privately – provided, the mean hospitalisation expenses are extremely high, even higher than the commercial insurers. One could conjecture that in the context of publicly funded insurance schemes where third – party payment is made to a private provider, such as, TN, AP and CGHS supply – side moral hazard appears to be loaded heavily in favour of private providers. It is worth observing that nearly all providers under TN and CGHS are private hospitals while in Andhra Pradesh, over 80%

of the hospitalisation under Aarogyasri takes place in private hospitals. In contrast, in the context of privately – funded and privately – provided health can coverage, demand – side, as well as supply – side moral hazard appears to be playing equal part. It is interesting to note the mean expenditure per inpatient episode under RSBY appears one of the lowest at Rs. 4,262. If one were to accept this figure, the problem of moral hazard does not seem to be prevalent under the centrally sponsored scheme.

Emerging Malpractices and Corruption:

Under the scenario of health insurance, patients, insurers and providers have a unique of their own to influence outcomes. Medical providers, especially, have a unique role in exaggerating claims and therefore unduly benefit from such outcomes, as they possess the capacity to influence treatment. The health insurance industry has been marked by the large amount of fraudulent claims. It has neither been easy to detect fraud nor manage it as monitoring individual claims or hospitals on regular basis is an expensive affair that adds to the overall cost of insurance thereby making it unattractive to consumers. Most health insurance schemes whether offered by the state or private insurers suffer from high claims ratios and over utilization. By an estimate the correct bed occupancy rate in empanelled hospitals is around 60 percent [60]. With most of the city hospitals reporting 80 -110 per cent bed occupancy. In term of hospital fraud, there are many reported cases of irregularities in the implementation of the Aarogyasri scheme. In Guntur District for example, three empanelled hospitals Nandana Critical Care Centre, BMR Multi – Specialty Hospital and Anjireddy Multi – specialty Hospital were blacklisted for performing thousands of unnecessary operations. It was found that out of 1.141 cases, 68

per cent (776) were performed on women in the age group of 21 to 40 with 584 cases shared by these three hospitals. The Director General of Vigilance recommended the removal of the their hospitals from the list and cancellation of their licenses [60] . In the same breath, 95 hospitals have been de –empanelled or suspended so far which is about 22 per cent of the empanelled owing to the reported cases of fraud and other reasons [61]**.** The utilisation pattern in the provider network shows an interesting trend Chart 5.2 of maximum claims from top 20 hospitals under various schemes. For e.g. nearly 60% claims under Vajapayee Aarogyasri and Yeshasvini were made by top 20 hospitals. As per Family Health Plan Ltd. (FHPL), the implementation agency for Yeshsvini figures, Narayana Hrudayala (NH) alone claimed 32% of the total claimed amount for 15% of the total cases in 2008 – 2009 [62]. It is not supporting at all as the owner of NH Dr. Devi Prasad Shetty has been instrumental in the establishment and development of the scheme that was started in 2003 just two years after the establishment of NH with 500beds, 10 fully commissioned operating theatres (OTs), two cardiac catheterization laboratories and its own blood and value banks. The bed occupancy rate in Karnataka was reported to be as low as 35% at the time [63] . The latest philosophy of corporate hospitals since the introduction of health insurance schemes for the poor seems to be high volume at low cost, which is 180 degrees from the past strategy of high cost low volume treatments and NH has a pioneer of this model. Frauds have been found to happen in collusion with patients, who are made to sign for costlier procedures irrespective of the actual treatment. Smart cards that are loaded with the funds have made it very easy for hospitals to make fraudulent claims. In some cases, hospitals claim money for patients who haven't got any care. Such patients are paid a small amount by the provider, which claims larger amount

from insurance companies. Frauds in health insurance claims that relate to overstating of claims or manipulation of documents of non – existing hospitals, pharmacies etc or to cover – up non – disclosure of facts at the proposal stage have been identified as the major cause for high claims ratios in the industry. Insurers have a responsibility to ensure that there is an efficient mechanism in place to weed out such fraudulent attempts so that claims ratios remain healthy and IRDA should recognise and reward such initiatives by Insurance companies.

Geometry of Health Insurance Coverage:

The breadth of the coverage denotes to the percentage of population covered by the insurance scheme – are the poor only covered or are all sections of society covered? The depth of the coverage relates to the extent of benefit packages offered in the scheme – does the benefit cover only hospitalisation or outpatient care as well or does it exclude pre – existing diseases? Height of the coverage, on the other hand, indicates the share of health care costs to prepayment and risk – pooling as against no prepayment and risk – sharing. From about 75 million people covered in 2007, in 2010, along with private health insurance, social – insurance programs and publicly funded schemes, the number of people covered went up significantly to roughly about 302 million, almost one – fourth of the population. Rajiv Aarogyasri, which spends in the range of Rs. 12,000 million population coverage of about 85% of its 84 million people.

Current Health Insurance Schemes – sustainability:

An early warning for financial trouble could come from claims ratios of the scheme. A continued and significant rise in claims ratios can threaten the continuance of the scheme. Utilization under various schemes shows an increasing trend over a period of time. Initially the utilization under schemes is low but it escalates suddenly with the rising awareness about the schemes and / or the reaching out of the schemes to more and more beneficiaries steadily increasing utilisation in all schemes makes demand for more public funds. Delhi's predominance in the social insurance scheme is to do with the concentration of both CGHS and ESIS. Moreover, in a strict sense, CGHS cannot be called a health insurance program, as there is hardly any pooling with no involvement of any health insurance companies or trust. A large proportion of impoverishment occurs due to spending on outpatient care, especially drugs. But insurance programs typically end up focusing disproportionately on tertiary care. Except ESIS, hospitals – centrism is the focus of all these programs. Experience of developed countries suggest that undue thrust on tertiary care can lead to poor value for money. Several middle – income countries such as, Chile, Brazil, Thailand have also witnessed transition from the earlier hospital – centric thrust to primary care, on its way towards achieving universal coverage (WHO, WHO 2008).

Evidence collated from several sources suggests that a disproportionate share of government spending on health care is spent on tertiary care. This is especially true after the launch of publicly funded health insurance programs recently. In fact, states such as, Delhi, Andhra Pradesh and Tamil Nadu are already spending well over half of all government expenditure on tertiary care. Andhra Pradesh and Tamil Nadu have appeared

to have fallen prey to a distorted consumer demand, misguided medical profession and the medico – industrial complex. The Tamil Nadu model, which is credited being a pioneer on several fronts in strengthening public health systems and especially on primary care, unfortunately went on to replicate its neighbour to the detriment of its long – term health strengthening efforts.

Problem with Rising Claims Ratio:

It is reported that commercial insurers under both public and private sector appears to be spending anywhere between Rs. 8 crores to Rs. 10 crores annually to unearth fraud. Andhra Pradesh model has clearly demonstrated the urgency of taking a hard look at the growing claims ratios, which has already reached about 89% during 2009 – 10, the third year of its operations. The premium amount is certainly not going to remain stable at the range of Rs. 260 – Rs. 290 in the following years.

The claims – ratio statistics of the Yeshasvini scheme in Karnataka clearly shows the growing graph of claims ratio every passing year, from 109% in its first year of its operation in 2003 – 04, to 150% in 2004 – 05 and 157% in 2005 – 06 .While much of the costs of the premium are subsidised by the scheme, it remains to be seen if in future such a trend will continue.

Is RSBY Scalable?

The current coverage of RSBY is limited – both the breadth and depth of the coverage. Currently, RSBY covers only the BPL population, using the BPL number derived from the Planning Commission. Several states believe that this list is very limited while states own list may be much larger than that of the Planning Commission. Himachal Pradesh provides a top – up to RSBY coverage, in terms of benefit package. For the poor families, in addition to 30,000 annual coverage, the Himachal Pradesh is offering benefit package for critical cover involving several surgical procedures that can be obtained from both public and private empanelled hospitals situated in the state as well as in the neighbouring states, given the proximity to the states' population. Interestingly, the Delhi government is also going in the direction of Himachal Pradesh, by providing a top – up to RSBY, thereby extending the facilities of critical care to vulnerable sections of society. State government could consider tweaking their original schemes by leveraging RSBY. As far as breadth of the coverage is concerned, if states want to extend the coverage of to APL population, it can do so by using state's own resources for providing cover over and above the RSBY cut – off . In addition , the present benefit coverage of Rs. 30,000 per annum per family looks quite low under RSBY compared to Rajiv Aarogyasri, States that are struggling to control costs and unable to sustain these schemes needs to consider seriously topping up benefit package over and above RSBY limits, which would to some extent, tide over financial difficulties.

Role of CGHS and ESIS in Future:

ESIS covers 55.5 million and CGHS covers 3 million. While the annual expenditure of ESIS stood at around RS. 19,900 million, the CGHS, on the other hand, spent about Rs. 16,000 million. The later model is clearly driven by high – end tertiary care, the former relies heavily on its own facilities, thereby reducing supply – side moral hazard to a great extent. Given that ESIS has an extensive network of health facilities that caters to both outpatient (1398 ESI dispensaries and 44 ISM units) and inpatient facilities (about 150 hospitals), is expected to filter out unnecessary tertiary care at the primary referral levels. CGHS on the other hand, although covers outpatient care, the referral systems are not quite are not quite robust, with only a few dispensaries while beneficiaries can walk up to tertiary care facilities without referrals.

Towards An Integrated Model:

Currently, there are three central government health insurance schemes run by two ministries (CGHS by the ministry of Health and Family Welfare) and (ESIS and RSBY administered by the Ministry of Employment and Labour). While the CGHS covers largely the civil servants, ESIS is by and large caters to organized/formal sector employees and RSBY facilities access to secondary care to informal/poor population. CGHS driven more by tertiary care, while RSBY catering to secondary care and ESIS providing all three levels of care in addition to referrals outside its system for certain tertiary care. It makes eminet sence to integrate all three schemes under one umbrella in order to leverage the volume and velocity of rick pools and funds. A combined entity of ESIS – RSBY – CGHS would create a ready pool of about 138 million population with a

staggering budget of roughly Rs. 40,000 million with a per capita expenditure of Rs. 290 per annum.

The benefit of such a scheme would provide tremendous value for money for all the stakeholders – payer. Purchaser, provider and beneficiary. This would also ensure efficient allocation and utilization of funds. For instance, presently, the ESIS has a large network of hospitals and dispensaries, but underutilized to a large extent. A combined entity would not only allow CGHS beneficiaries but must also open up its facilities to RSBY beneficiaries. The gate – keeping function of referral systems that ESIS is offering at present would be useful in controlling cost. RSBY and CGHS beneficiaries could avail the benefits of ESIS facilities. While efforts could be made to strengthen ESIS facilities for super specialty care as well, the CGHS and RSBY beneficiaries can allowed to access care from private facilities in a limited manner until such facilities are upgraded.

An autonomous corporate body could be set – up to professionally manage the funds and administration. By strengthening its system in the medium term, an integrated model could leverage its budget by empanelling super specialists (on – call) into its hospital facilities. An immediate task would be improve and upgrade its facilities to cater to 8 – hour outpatient care to its beneficiaries. Given that outpatient care plays an important role (high – volume), especially involving the cost of medicines, there is a need to spruce up its procurement system. A centralized drug procurement system could help achieve value for money and at the same time reduce irrational prescriptions and dispensing.

Insurance for Outpatient Treatment:

Global experience suggests that several countries include outpatient care, especially drug reimbursement as a critical component of health insurance coverage. Ideally, it makes sense to include medicine for reimbursement under the Indian conditions, when evidence shows that the effect on catastrophic payments and impoverishment in India occurs due to outpatient care especially due to drugs. History clearly reveals the improvement effect OOP is largely due to households paying a higher share of their health expenditure on outpatient care especially on drugs. However, in India, expect CGHS and ESIS, none of the insurance program providers for medicine reimbursement. While the private health insurance companies deny the policy – holders of any outpatient coverage, the recent experience of RSBY, and other state – based schemes also shows that they exclude outpatient coverage, and therefore reimbursement of medicine is not allowed under any of these schemes.

MEDICAL INSURANCE IN A.P. (RAJIV AAROGYASRI)

Aarogyasri consists of two schemes Aarogysri I and Aarogyasri II. Although Aarogyasri I was started from April 1st 2007 it became fully operational in 2008. The scheme provides financial protection to families living below poverty line upto Rs. 2 lakhs in a year for the treatment of serious ailments requiring hospitalization and surgery. 330 procedures are covered under the scheme. The scheme is being implemented through the Insurance Company, selected through a competitive bidding process. The objective of the scheme is to improve access of BPL families to quality medical care for treatment of identified diseases involving hospitalization and surgeries through an identified network of health care providers. The scheme provides coverage for the systems like Heart, Lung, Pancreas, Renal diseases, Burns, Cancer treatment and Polytrauma. Below poverty line families are photographed on the Rajive Aarogyasri Health Card/BPL Ration Card. The total reimbursement of Rs.1.50 lakhs can be availed of individually or collectively by the members of the family. An additional sum of Rs.50,000 is provided as buffer to take care of expenses if it exceeds the original sum i.e. Rs.1.50 lakhs per individual/family. Cost for cochlear Implant Surgery with Auditory – Verbal Therapy is reimbursed by the Trust up to a maximum of Rs.6.50 lakhs for each case.

The transaction is cashless for covered procedures. BPL beneficiary can go to hospital and come out without making any payment to the hospital for the procedures covered under the scheme. Hospitals have to conduct at least one free medical camp in a week, there by taking advanced evaluation to the doorstep of the patient. Area/District Hospitals and Network Hospitals, are provided with Help Desks manned by *Aarogya mithras* to facilitate the illiterate patients.

Aarogyasri II

Government have launched with effect from 17th July, 2008, Aarogyasri-II scheme to include a large number of additional surgical and medical diseases to enable many more BPL people who are suffering from acute ailments.

The front end of both the schemes viz., network hospitals, Aarogyamithras, Health Cards etc., are the same. Pre-authorization and claim processing for new diseases in Aarogyasri-II is being done by the Trust directly and funded from the C.M relief fund. The scheme covers 451 Surgical and 159 Medical Procedures for cash less treatment. With the launch of BPL population for all major diseases became possible in Government / Corporate hospitals.

Chapter 3 : Material & Methods

OBJECTIVE

1. To analyse Health Care Utilization in relation to Socio-Economic Status and Geographical location of the population.
2. To determine the preferences of the population in getting the treatment-Government facilities, Private facilities etc.
3. To analyse the Health Care Utilization based on the Health Insurance Status of the population.

MATERIAL & METHODS

Type of Study – It is a longitudinal descriptive study.

Inclusion and Exclusion criteria – *Inclusion criteria* - All Households, not individuals are included in the study. The definition of household in our study is a domestic unit consisting of the family members of a family who live together.

Exclusion criteria – a). Any house with a single family member living alone and aged above 70 years are not included in the study for the reason they may not give the correct answers for the questionnaire and since they are expected to have less memory power. b). Servants, both male and female and domestic helps who reside in the house are not included as household members. c). Relatives who are present in the household at the time of the interview are excluded from the study.

Sampling Technique and size The Study is conducted in three parts.

The **First Part** is a cross sectional study conducted in both Rural Areas and Urban Areas of Andhra Pradesh. The study is conducted two times on the same population, one in year 2007 and the second after Social Health Insurance is introduced in 2010. Interview is conducted in 10 big villages of Medak and Mahaboob Nagar Districts of Andhra Pradesh, five from each

District. All ten villages are within 100 kms, radius from Hyderabad City. Each village has a population of around 4000 to 5000, having a mix of high, middle and lower status Households. All the Households in each village are classified into three groups - Upper, Middle and Lower Status Households. From each of these three groups 25 Households were randomly selected for the study. So, from each village 75 Households were involved in the study. Since the survey covered ten villages in the two Districts, total Rural Households studied are 750. In each Household 17 questions were asked and findings were analyzed. A Second survey on the same Rural Population involving the same 750 Households was repeated in the year 2010 to analyze the Health Care Utilization after Social Health Insurance is introduced in Andhra Pradesh. The same exercise is repeated in Urban Area (Secunderabad) covering 250 Upper, 250 Middle and 250 Lower Status Households, totally 750 Households in the year 2007 and also in the year 2010. So, the total Households involved in both the Rural and Urban Areas are 1500 in the year 2007& 2010.

The **Second Part** of the study is Hospital Analysis to study the Surgical Interventions in a Government Hospital and in a Private Corporate Hospital, before and after the Medical Insurance. The second part of the study will help us to know whether Utilization of Health Care increased after the Insurance. Surgical Interventions in Government Hospital in the year 2007 are analyzed and compared with the Surgical Interventions in the year 2010, post insurance. Surgical Interventions in a Private Corporate Hospital in Secunderabad in the year 2007 are analyzed and compared with the Surgical Interventions in the year 2010, post insurance.

The **Third Part** of the study is Appendicectomy Analysis. Appendicectomy is one of the most commonly performed Surgeries. This study is undertaken to find out whether Insurance increases excess Medical Care Utilization by different providers – Government and Private. Surgeries under taken for Appendicitis in a Government Hospital in Hyderabad during the

months of August, September and October 2007 are studied retrospectively. The Pathology Reports of the first 25 Appendicectomy specimens are collected for conformation of diagnosis retrospectively. There could be some bias since Pathology Reports of same hospital is analysed. After RAS is introduced the first 25 Appendicectomy specimens of August, September and October 2010 are sent prospectively to reputed Pathology Laboratory in Hyderabad for conformation of diagnosis to avoid same institution bias.

Surgeries under taken for Appendicitis in Secunderabad's leading Private Corporate Hospital during the months of August, September, October and November 2007 are studied retrospectively. There could be some bias since Pathology Reports of same Hospital are analysed. After RAS is introduced the first 25 Appendicectomy specimens of August, September and October 2010 are sent prospectively to reputed Pathology Laboratory in Hyderabad for conformation of diagnosis to avoid same institution bias.

Data Collection Tools - Pre-designed and Pre-tested questionnaire was used to interview the members of the households.

Data Analysis - SPSS version 10.0 is used for data analysis.

SOCIO-ECONOMIC CLASSIFICATION IN OUR STUDY

Generally Pareekh Classification is used for calculating Socio-Economic Status in Rural Areas. Here nine characteristics are taken into account namely Caste, Occupation of family head, Education of family head, Level of social participation of family head, Land holding, Housing, Farm power, Material possessions and Type of family. Generally Kuppuswami Scale is also widely used to measure the socio-economic status of an individual in Urban Community based on three variables namely Education, Occupation and Income. Since both the above classifications are based on multiple factors it became difficult to illicit complete responses from different Households, Modified B G Prasad's Classification (December, 2004) is used in our present work for both Rural and Urban Areas. Monthly Income from Rs.

5,000/- to 10,000/- in a Household is considered as Upper Class. Monthly Income from Rs.1,500/- to 5,000/- in a Household is considered as Middle Class. Monthly Income below Rs. 1,500/- is considered as Lower Class.

Chapter 4 : Findings

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Consultation	67 (13.4%)	31 (6.2%)	11 (2.2%)	109 (7.2%)
Less than 3 times	196 (39.2%)	192 (38.4%)	103 (20.6%)	491 (32.7%)
More than 3 times	237 (47.4%)	277 (55.4%)	386 (77.2%)	900 (60%)

Table 5: Out Patient Consultations (2007) Number of times the respondent/member of the respondent family attended outpatient consultation.

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Cosultation	71 (14.2%)	11 (2.2%)	2 (0.4%)	84 (5.5%)
Less than 3 times	203 (40.6%)	112 (22.4%)	61 (12.2%)	376(25%)
More than 3 times	226 (45.2%)	377 (75.4%)	437 (87.4%)	1040(69%)

Table 5(A): Out Patient Consultations (2010) Number of times the respondent/member of the respondent family attended outpatient consultation.

Table 5

In 2007, 663 patients (277 middle status patients and 386 lower status patients) attended the out patient consultation more than thrice .In 2010 , post Rajiv Aarogyasri (RAS) insurance 814 patients (377 middle status patients and 437 lower status patients) attended the out patient consultation more than thrice, a jump of 23% .

The findings are similar to Research And Development (RAND) health insurance experiment in US. The RAND findings were "uninsured had only about 2/3 ^{rds} the no. of OPD visits per year compared to the insured ".

In the year 1986 itself PAULY concluded that health insurance will provide a strong incentive for over- consumption.

In 2007, 67 high status individuals had no OPD consultation at all . In 2010 almost the same no (71) had no OPD consultation. The reason is all the high status individuals did not receive the RAS card .

In 2007, 196 high status individuals had OPD consultation less than three times. In 2010 all most the same number (203) had OPD consultation less than three times, since there is no change in their insurance status.

In 2007, 237 high status individuals had OPD consultation more than three times. In 2010 all most the same number (226) had OPD consultation more than three times, since there is no change in their insurance status.

In 2007, 31 middle status individuals had no OPD consultations at all. In 2010 armed with the RAS card , these middle status individuals had more OPD consultations, and only 11 individuals had no OPD consultation.

In 2007, 11 lower status individuals had no OPD consultations at all. In 2010 armed with the RAS card , these lower status individuals had more OPD consultations, and only 2 individuals had no OPD consultation.

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Admission	226 (45.2%)	297 (59.4%)	294 (58.8%)	817 (54.4%)
Less than 3 times	207 (41.4%)	156 (31.2%)	186 (37.2%)	549 (36.6%)
More than 3 times	67 (13.4%)	47 (9.4%)	20 (4%)	134 (8.9%)

Table 6: Admissions (2007) Number of times the respondent/member of the respondent family were admitted

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Admission	217 (43.4%)	156 (31.2%)	31 (6.2%)	404 (27%)
Less than 3 times	211 (42.2%)	229 (45.8%)	251 (50.2%)	691 (46.1%)
More than 3 times	72 (14.4%)	115 (23%)	218 (43.6%)	405 (27%)

Table 6(A): Admissions (2010) Number of times the respondent/member of the respondent family were admitted.

Table 6:

In 2007, 409 patients (203 middle status patients and 206 lower status patients) were admitted in a hospital .In 2010 , post Rajiv Arogyasri (RAS) insurance 813 patients (344 middle status patients and 469 lower status patients) were admitted in a hospital a jump of 99%.

The findings are similar to RAND health insurance experiment in US. The RAND findings were "annual hospital visits per capita of 0.13 were noticed in Americans in totally free insurance group were as annual hospital visits per capita was reduced to 0.11 in Americans who had 25% co-insurance and the annual hospital visits per capita were further reduced to 0.09 in Americans who had 50% co- insurance ." These findings were reported by Newhouse(1993)[68].

In 2007, 226 high status individuals had no hospital admission at all. In 2010 almost the same no (211) had no hospital admission. The reason is all the high status individuals did not receive the RAS card .

In 2007, 207 high status individuals had hospital admission less than three times. In 2010 all most the same number (211) had hospital admission less than three times, since there is no change in their insurance status.

In 2007, 67 high status individuals had hospital admissions more than three times. In 2010 all most the same number (72) had hospital admissions more than three times, since there is no change in their insurance status.

In 2007, 297 middle status individuals had no hospital admissions. In 2010 armed with the RAS card , these middle status individuals had more hospital admissions, and only 156 individuals had no hospital admissions.

In 2007, 206 lower status individuals had no hospital admissions at all. In 2010 armed with the RAS card , these lower status individuals had more hospital admissions , and only 31 individuals had no hospital admissions.

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Admission	67 (13.4%)	31 (6.2%)	11 (2.2%)	109 (7.3%)
Government	66 (13.2%)	148 (29.6%)	254 (50.8%)	468 (31.3%)
Private	367 (73.4%)	321 (64.2%)	235 (47%)	923 (61.6%)

Table 7: Preferred OP Consultation (2007).

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Admission	71 (14.2%)	11 (2.2%)	2 (0.4%)	84 (5.5%)
Government	60 (12%)	102 (20.4%)	132 (26.4%)	294 (19.6%)
Private	396 (79.2%)	387 (77.4%)	366 (73.2%)	1149(74.8%)

Table 7(A): Preferred OP Consultation (2010).

Table 7:

In 2007, 402 patients (148 middle status patients and 254 lower status patients) had OP consultation in a government facility .In 2010 , post Rajiv Aarogyasri (RAS) insurance 234 patients (102 middle status patients and 132 lower status patients) had OP consultation in a government facility, a reduction of 72% (- 72%) .

In 2007, 556 patients (321 middle status patients and 235 lower status patients) had OP consultations in a private facility. In 2010, post RAS insurance 753 patients (387 middle status patients and 366 lower status patients) had OP consultation in private facility, a jump of 35%. RAS does not cover OP consultations; even then, RAS card holders are preferring private OP consultations.

In 2007, 66 high status individuals had OP consultation in a government facility. In 2010 almost the same number (60) had OP consultation in government facility.

In 2007, 367 high status individuals had OP consultation in a private facility. In 2010 almost the same number (396) had OP consultations in private facility. The reason is almost all the high status individual did not receive the RAS card.

In 2007, 148 middle status patients had OP consultations in a government facility. In 2010, post RAS insurance 102 middle status patients had OP consultations in a government facility, a reduction of 45% (-45%).

In 2007, 321 middle status patients had OP consultations in a private facility. In 2010, post RAS insurance 387 middle status patients had OP consultations ina private facility, an increase of 21%.

In 2007, 254 lower status patients had OP consultations in a government facility. In 2010, post RAS insurance 132 lower status patients had OP consultations in a government facility, a reduction of 92% (-92%).

In 2007, 235 lower status patients had OP consultations in a private facility. In 2010, post RAS insurance 366 lower status patients had OP consultations in a private facility, an increase of 56%.

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Admission	226 (45.2%)	297 (59.4%)	294 (58.8%)	817 (54.4%)
Government	13 (2.6%)	90 (18%)	159 (31.8%)	262 (17.5%)
Private	261 (52.2%)	113 (22.6%)	47 (9.4%)	421 (28%)

Table 8: Admission Preference (2007)

P < 0.001 Chi-Square(x^2) = 265.3

No. of times	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Admission	217 (43.4%)	156 (31.2%)	31 (6.2%)	404 (27%)
Government	16 (3.2%)	127 (25.4%)	172 (34.4%)	315 (21.1%)
Private	267 (53.4%)	217 (43.4%)	301 (60.2%)	785 (52.4%)

Table 8(A): Admission Preference (2010).

P < 0.001 Chi-Square(x^2) = 98.5

Table 8

Chi Square Test

Hypothesis 1:

H_0 *= There is no difference in Hospital Admission Preference among different providers across Socio-Economic Classes.*

H_1= *There is difference in Hospital Admission Preference among different providers across Socio-Economic Classes.*

X^2Cal = 265.3

X^2Tab *= 5.99 I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Hospital Admission Preference among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 *= There is no difference in Hospital Admission Preference among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

H_1= *There is difference in Hospital Admission Preference among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

X^2Cal = 98.5

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Hospital Admission Preference among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 409 patients (203 middle status patients and 206 lower status patients) were admitted in a hospital. In 2010, post Rajiv Aarogyasri (RAS) insurance 813 patients (344 middle status patients and 469 lower status patients) were admitted in a hospital a jump of 99%. Due to this huge jump in hospital admissions, private hospitals in Hyderabad are reporting 80 – 110 % bed occupancy (Deccan chronicle 12-02-2009) [69]

In 2007, 226 high status individuals had no hospital admission at all. In 2010 almost the same no (217) had no hospital admission. The reason is all the high status individuals did not receive the RAS card.

In 2007, 13 high status individuals had hospital admission in government facility. In 2010, almost the same number (16) were admitted in government facilities, since there is no change in their insurance status.

In 2007, 261 high status individuals had hospital admissions in private facility. In 2010, all most the same number (267) were admitted in private facility, since there is no change in their insurance status.

In 2007, 90 middle status individuals had hospital admissions in government facility. In 2010 armed with the RAS card, 127 middle status individuals had hospital admissions in government facility, a jump of 41%.

In 2007, 113 middle status patients had hospital admissions in private facility. In 2010, armed with the RAS card, 217 middle status patients had hospital admissions in private facility a jump of 92%.

With the introduction of RAS admissions of middle status card holders increased in both government and private hospitals and more than double going to the private (92%)than the government hospitals (41%).

In 2007, 159 lower status individuals had hospital admissions in government facility. In 2010 armed with the RAS card, 172 lower status individuals had hospital admissions in government facility, a jump of 8%.

In 2007, 47 lower status individuals had admissions in private facility. In 2010 armed with the RAS card, 301 lower status individuals had hospitals admissions in private facility, a jump of 540%.

For preference for hospital admissions, between government and private facilities, between the year 2007 and 2010 there is no significant change among high status individuals, since there is no change in their insurance status. For preference for hospital admissions, the middle status and lower status ARS card holders, between government and private facilities, between the year 2007 and 2010, there is 324% jump in using private facilities and only 20% jump in using government facilities.

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Requirement	15 (3%)	22 (4.4%)	41 (8.2%)	78 (5.2%)
No planning	61 (12.2%)	90 (18%)	130 (26%)	281 (18.8%)
Government	103 (20.6%)	165 (33%)	222 (44.4%)	490 (32.7%)
Private	321 (64.2%)	223 (44.6%)	107 (21.4%)	651 (43.4%)

Table 9: Temporary Family Planning Needs (2007).

P < 0.001 Chi-Square(x^2) = 141.1

Provider	High Status(n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Requirement	19 (3.8%)	28 (5.6%)	51 (10.2%)	98 (6.6%)
No planning	50 (10%)	73 (14.6%)	97 (19.4%)	220 (14.7%)
Government	71 (14.2%)	135 (27%)	151 (30.2%)	357 (23.8%)
Private	360 (72%)	264 (52.8%)	201 (40.2%)	825 (55%)

Table 9(A): Temporary Family Planning Needs (2010)

P < 0.001 Chi-Square(x^2) = 67.9

Table 9

Chi Square Test

Hypothesis 1:

H_0 *= There is no difference in Utilization of Temporary Family Planning Needs among different providers across Socio-Economic Classes.*

H_1= *There is difference in Utilization of Temporary Family Planning Needs among different providers across Socio-Economic Classes.*

X^2Cal = 141.1

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Temporary Family Planning Needs among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 *= There is no difference in Utilization of Temporary Family Planning Needs among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

H_1= *There is difference in Utilization of Temporary Family Planning Needs among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

X^2Cal = 67.9

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Temporary Family Planning Needs among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 387 individuals (165 middle status individuals and 222 lower status individuals) attended government facilities for temporary family planning needs. In 2010, only 286 individuals (135 middle status individuals and 151 lower status individuals) attended for temporary family planning needs, a reduction of 35%(-35%).

In 2007, 330 individuals (223 middle status individuals and 107 lower status individuals) attended private facilities for temporary family planning needs. In 2010, 465 individuals (264 middle status individuals and 201 lower status individuals) attended for temporary family planning needs, a jump of 41%,although RAS does not cover family planning.

In 2007, 15 high status individuals did not have any temporary family planning needs. In 2010, 19 individuals did not have any temporary family planning needs.

In 2007, 103 high status individuals attended government facilities for temporary family planning needs. In 2010, only 71 high status individuals attended in government facilities for temporary family planning needs, a reduction of 45%(-45%).

In 2007, 165 middle status individuals attended government facilities for temporary family planning needs. In 2010, only 135 middle status individuals attended in government facilities for temporary family planning needs, a reduction of 22%(-22%).

In 2007, 222 lower status individuals attended government facilities for temporary family planning needs. In 2010, only 151 lower status individuals attended in government facilities for temporary family planning needs, a reduction of 47% (-47%).

In 2007, 321 high status individuals attended private facilities for temporary family planning needs. In 2010, 360 high status individuals attended in private facilities for temporary family planning needs, an increase of 12%.

In 2007, 223 middle status individuals attended private facilities for temporary family planning needs. In 2010, 264 middle status individuals attended in private facilities for temporary family planning needs, an increase of 18%.

In 2007, 107 lower status individuals attended private facilities for temporary family planning needs. In 2010, 201 lower status individuals attended in private facilities for temporary family planning needs, an increase of 88%.

The RAS card holder seems to prefer private facilities for temporary family planning needs. This preference is more marked in lower status card holders than middle status card holders, although RAS does not cover temporary family planning needs.

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	398 (79.6%)	346 (69.2)	219 (43.8%)	963 (64.2%)
No Check up	0	0	5(1%)	5 (1%)
Government	9 (1.8%)	41 (8.2%)	129 (25.8%)	179 (11.9%)
Private	93 (18.6%)	113 (22.6%)	147 (29.4%)	353 (23.5%)

Table 10: Source of Antenatal Care (2007)

P < 0.001 Chi Square (X^2) = 52.7

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	407 (81.4%)	359 (71.8%)	223 (44.6)	989 (65.9%)
No Check up	0	0	3 (0.6%)	3 (0.6%)
Government	6 (1.2%)	29 (5.8%)	98 (19.6%)	133 (8.9%)
Private	87 (17.4%)	114 (22.8%)	176 (35.2%)	377 (25.1%)

Table 10(A): Source of Antenatal Care (2010)

P < 0.001 Chi Square (X^2) = 34.4

Table 10

Chi Square Test

Hypothesis 1:

H_0 = *There is no difference in Utilization of Antenatal Care among different providers across Socio-Economic Classes.*

H_1= *There is difference in Utilization of Antenatal Care among different providers across Socio-Economic Classes.*

X^2Cal = 52.7

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Antenatal Care among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 = *There is no difference in Utilization of Antenatal Care among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

H_1= *There is difference in Utilization of Antenatal Care among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

X^2Cal = 34.4

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Antenatal Care among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 170 individuals (41 middle status individuals and 129 lower status individuals) attended antenatal care in government facilities. In 2010, only 127 individuals (29 middle status individuals and 98 lower status individuals) attended antenatal care in government facilities., a reduction of 34%(-34%).

In 2007, 9 high status individuals attended antenatal care in government facilities. In 2010, only 6 high status individuals attended antenatal care in government facilities, a reduction of 50%(-50%).

In 2007, 41 middle status individuals attended antenatal care in government facilities. In 2010, only 29 middle status individuals attended antenatal care in government facilities, a reduction of 41%(-41%).

In 2007, 129 lower status individuals attended antenatal care in government facilities. In 2010, only 98 lower status individuals attended antenatal care in government facilities, a reduction of 32%(-32%).

In 2007, 260 individuals (113 middle status individuals and 147 lower status individuals) attended antenatal care in private facilities. In 2010, 290 individuals (114 middle status individuals and 176 lower status individuals) attended antenatal care in private facilities, a jump of 12%,although RAS does not cover antenatal care.

In 2007, 93 high status individuals attended antenatal care in private facilities. In 2010, only 87 high status individuals attended antenatal care in private facilities, a reduction of 7% (-7).

In 2007, 113 middle status individuals attended antenatal care in private facilities. In 2010, 114 middle status individuals attended antenatal care in private facilities, a jump of 1%.

In 2007, 147 lower status individuals attended antenatal care in private facilities. In 2010, 176 lower status individuals attended antenatal care in private facilities, a jump of 20%.

The RAS card holders seems to prefer private facilities for antenatal care. This preference is more marked in lower status card holders than middle status card holders, although RAS does not cover antenatal care.

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	**361 (72.2%)**	**316 (63.2%)**	**199 (39.8%)**	**876 (58.4%)**
No Check up	**3 (0.6%)**	**11 (2.2%)**	**51 (10.2%)**	**65 (4.3%)**
Government	**6 (1.2%)**	**22 (4.4%)**	**131 (26.2%)**	**159 (10.6%)**
Private	**130 (26%)**	**151 (30.2%)**	**119 (23.8%)**	**400 (26.7%)**

Table 11: Intrapartum Care (2007).

P < 0.001 **Chi Square (X^2) = 130.1**

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	**370 (74%)**	**367 (73.4%)**	**213 (42.6%)**	**950 (63.3%)**
No Check up	**2 (0.4%)**	**8 (1.6%)**	**37 (7.4%)**	**47 (3.1%)**
Government	**2 (0.4%)**	**15 (3%)**	**76 (15.2%)**	**93 (6.2%)**
Private	**126 (25.2%)**	**150 (30%)**	**174 (34.8%)**	**450 (30%)**

Table 11(A): Intrapartum Care (2010)

P < 0.001 **Chi Square (X^2) = 56.6 (**Since one value in a cell is less than 5, Yate's Correction was done)

Table 11

Hypothesis 1:

H_0 = There is no difference in Utilization of Intrapartum Care among different providers across Socio-Economic Classes.

H_1= There is difference in Utilization of Intrapartum Care among different providers across Socio-Economic Classes.

X^2Cal = 130.1

X^2Tab = 5.99 I

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Intrapartum Care among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 = There is no difference in Utilization of Intrapartum Care among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

H_1= There is difference in Utilization of Intrapartum Care among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

X^2Cal = 56.6

X^2Tab = 5.99 I

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Intrapartum Care among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 153 individuals (22 middle status individuals and 131 lower status individuals) attended Intra partum care in government facilities. In 2010, only 91 individuals (15 middle status individuals and 76 lower status individuals) attended intra partum care in government facilities, a reduction of 68%(-68%).

In 2007, 6 high status individuals attended intra partum care in government facilities. In 2010, only 2 high status individuals attended intra partum care in government facilities, a reduction of 200%(-200%).

In 2007, 22 middle status individuals attended intra partum care in government facilities. In 2010, only 15 middle status individuals attended intra partum care in government facilities, a reduction of 47%(-47%).

In 2007, 131 lower status individuals attended intra partum care in government facilities. In 2010, only 76 lower status individuals intra partum care in government facilities, a reduction of 72%(-72%).

In 2007, 270 individuals (151 middle status individuals and 119 lower status individuals) attended intra partum care in private facilities. In 2010, 324 individuals (150 middle status individuals and 174 lower status individuals) attended intra partum care in private facilities, a jump of 20%,although RAS does not cover intra partum care.

In 2007, 130 high status individuals attended intra partum care in private facilities. In 2010, almost the same number (126) high status individuals attended intra partum care in private facilities.

In 2007, 151 middle status individuals attended intra partum care in private facilities. In 2010, almost the same number (150) middle status individuals attended intra partum care in private facilities.

In 2007, 119 lower status individuals attended intra partum care in private facilities. In 2010, 174 lower status individuals attended intra partum care in private facilities, a jump of 46%. The lower status RAS card holders in large numbers seem to be preferring private facilities for intra partum care, then the middle status RAS card holders and high status individuals.

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status(n=500)	Total % (n=1500)
No Case	449 (89.8%)	425 (85%)	363 (72.6%)	1237 (82.5%)
Government	4 (0.8%)	33 (6.6%)	97 (19.4%)	134 (8.9%)
Private	47 (9.4%)	42 (8.4%)	40 (8%)	129 (8.6%)

Table 12: Terminal Methods of F P (Tubectomy/Vasectomy) 2007.

P < 0.001 **Chi Square (X^2) = 60.3 (**Since one value in a cell is less than 5, Yate's Correction was done)

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	457 (91.4%)	433 (86.6%)	380 (76%)	1270 (84.7%)
Government	2 (0.4%)	21 (4.2%)	49 (9.8%)	72 (4.8%)
Private	41 (8.2%)	46 (4%)	71 (14.2%)	158 (10.5%)

Table 12(A): Terminal Methods of F P (Tubectomy/Vasectomy) 2010.

P < 0.001 **Chi Square (X^2) = 17.7(**Since one value in a cell is less than 5, Yate's Correction was done)

Table 12

Chi Square Test

Hypothesis 1:

H_0 *= There is no difference in Utilization of Terminal Family Planning Needs among different providers across Socio-Economic Classes.*

H_1= *There is difference in Utilization of Terminal Family Planning Needs among different providers across Socio-Economic Classes.*

X^2Cal = 60.3

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Terminal Family Planning Needs among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 *= There is no difference in Utilization of Terminal Family Planning Needs among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

H_1= *There is difference in Utilization of Terminal Family Planning Needs among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

X^2Cal = 17.7

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Utilization of Terminal Family Planning Needs among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 130 individuals (33 middle status individuals and 97 lower status individuals) got terminal methods of family planning in government facilities. In 2010, only 100 individuals (21 middle status individuals and 49 lower status individuals) got terminal methods of family planning methods in government facilities, a reduction of 30%(-30%).

In 2007, 4 high status individuals got terminal methods of family planning in government facilities. In 2010, only 2 high status individuals got terminal methods of family planning in government facilities, a reduction of 100%(-100%).

In 2007, 33 middle status individuals got terminal methods of family planning in government facilities. In 2010, only 21 middle status individuals got terminal methods of family planning in government facilities, a reduction of 57%(-57%).

In 2007, 97 lower status individuals got terminal methods of family planning in government facilities. In 2010, only 49 lower status individuals got terminal methods of family planning in government facilities, a reduction of 98%(-98%).

In 2007, 82 individuals (42 middle status individuals and 40 lower status individuals) got terminal methods of family planning in private facilities. In 2010, 117 individuals (46 middle status individuals and 71 lower status individuals) got terminal methods of family planning in private facilities, a jump of 16%, although RAS does not cover terminal methods of family planning.

In 2007, 47 high status individuals got terminal methods of family planning in private facilities. In 2010, only 41 high status individuals got terminal methods of family planning in private facilities, a reduction 15%(-15%)

In 2007, 42 middle status individuals got terminal methods of family planning in private facilities. In 2010, 46 middle status individuals got terminal methods of family planning in private facilities, an increase of 10%.

In 2007, 40 lower status individuals got terminal methods of family planning in private facilities. In 2010, 71 lower status individuals got terminal methods of family planning in private facilities, a jump of 76%.

The lower status RAS card holders in large numbers seem to be preferring private facilities for terminal methods of family planning, then the middle status RAS card holders and high status individuals.

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	407 (81.4%)	355 (71%)	219 (43.8%)	981 (65.4%)
No Check up	0	2 (0.4%)	7 (1.4%)	9 (0.6%)
Government	39 (7.8%)	79 (15.8%)	180 (36%)	298 (19.9%)
Private	54 (10.8%)	64 (12.8%)	94 (18.8%)	212 (14.1%)

Table 13: Immunization Source (2007).

P < 0.001 Chi Square (X^2) = 16.9

Provider	Higher Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Case	421 (84.2%)	374 (74.8%)	239 (47.8%)	1034 (68.9%)
No Check up	0	7 (1.4%)	13 (2.6%)	20(1.3%)
Government	26 (5.2%)	42 (8.4%)	97 (19.4%)	165 (11%)
Private	53 (10.6%)	77 (15.4%)	151 (30.2%)	281 (18.7%)

Table 13(A): Immunization Source (2010)

Table 13

In 2007, 259 individuals (79 middle status individuals and 180 lower status individuals) received immunization in government facilities. In 2010, only 139 individuals (42 middle status individuals and 97 lower status individuals) received immunization methods in government facilities, a reduction of 86%(-86%).

In 2007, 39 high status individuals received immunization in government facilities. In 2010, only 26 high status individuals received immunization in government facilities, a reduction of 50%(-50%).

In 2007, 79 middle status individuals received immunization in government facilities. In 2010, only 42 middle status individuals received immunization in government facilities, a reduction of 88%(-88%).

In 2007, 180 lower status individuals received immunization in government facilities. In 2010, only 97 lower status individuals received immunization in government facilities, a reduction of 86%(-86%).

In 2007, 158 individuals (64 middle status individuals and 94 lower status individuals) received immunization in private facilities. In 2010, 228 individuals (77 middle status individuals and 151 lower status individuals) received immunization in private facilities, a jump of 44%, although RAS does not cover immunization.

In 2007, 54 high status individuals received immunization in private facilities. In 2010, almost the same number (53) high status individuals received immunization in private facilities.

In 2007, 64 middle status individuals received immunization in private facilities. In 2010, 77 middle status individuals received immunization in private facilities, an increase of 20%.

In 2007, 94 lower status individuals received immunization in private facilities. In 2010, 151 lower status individuals received immunization in private facilities, a jump of 61%.

The lower status RAS card holders in large numbers seem to be preferring private facilities for immunization, then the middle status RAS card holders and high status individuals.

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Cases	167 (33.4%)	94 (18.8%)	49 (9.8%)	310(20.7%)
Self-Medication	79 (15.8%)	83 (16.6%)	107 (21.4%)	269 (18%)
Pharmacy Consultation	39 (7.8%)	88 (17.6%)	99 (19.8%)	226 (15.1%)
Government	37 (7.4%)	102 (20.4%)	143 (28.6%)	245 (16.3%)
Private	172 (34.4%)	130 (26%)	102 (20.4%)	404 (27%)

Table 14: Health Care utilization for Diarrhoeal Diseases (2007) (Usually medical emergency).

P < 0.001 Chi Square (X^2) = 78.2

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Cases	143 (28.6%)	79 (15.8%)	31 (6.2%)	253 (16.9%)
Self-Medication	63 (12.6%)	74 (14.8%)	89 (17.8%)	226 (15.1%)
Pharmacy Consultation	49 (9.8%)	112 (22.4%)	121 (24.2%)	282 (18.8%)
Government	24 (4.8%)	52 (10.4%)	100 (20%)	176 (11.7%)
Private	221 (44.2%)	183 (36.6%)	159 (31.8%)	563 (37.5%)

Table 14(A): Health Care utilization for Diarrhoeal Diseases (2007) (Usually medical emergency).

P < 0.001 Chi Square (X^2) = 58.2

Table 14

Chi Square Test

Hypothesis 1:

H_0 *= There is no difference in Health Care Utilization for Diarrhoeal Diseases among different providers across Socio-Economic Classes.*

H_1= *There is difference in Health Care Utilization for Diarrhoeal Diseases among different providers across Socio-Economic Classes.*

X^2Cal = 78.2

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Health Care Utilization for Diarrhoeal Diseases among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 *= There is no difference in Health Care Utilization for Diarrhoeal Diseases among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

H_1= *There is difference in Health Care Utilization for Diarrhoeal Diseases among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

X^2Cal = 58.2

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Health Care Utilization for Diarrhoeal Diseases among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 245 individuals (102 middle status individuals and 143 lower status individuals) attended government facilities for diarrhoea (infectious disease). In 2010, only 152 individuals (52 middle status individuals and 100 lower status individuals) received attended government facilities for diarrhoea (infectious disease), a reduction of61%(-61%).

In 2007, 37 high status individuals attended government facilities for diarrhoea (infectious disease). In 2010, only 24 high status individuals attended government facilities for diarrhoea (infectious disease), a reduction of 54%(-54%).

In 2007, 102 middle status individuals attended government facilities for diarrhoea (infectious disease). In 2010, only 52 middle status individuals, a reduction of 96%(-96%).

In 2007, 143 lower status individuals attended government facilities for diarrhoea (infectious disease). In 2010, only 100 lower status individuals attended government facilities for diarrhoea (infectious disease), a reduction of 43%(-43%).

In 2007, 232 individuals (130 middle status individuals and 102 lower status individuals) attended private facilities for diarrhoea (infectious disease). In 2010, 342 individuals (183 middle status individuals and 159 lower status individuals) attended private facilities for diarrhoea (infectious disease), a jump of 47%, although RAS does not cover diarrhoea (infectious disease).

In 2007, 172 high status individuals attended private facilities for diarrhoea (infectious disease). In 2010, 221 high status individuals attended private facilities for diarrhoea (infectious disease), an increase of 29%.

In 2007, 130 middle status individuals attended private facilities for diarrhoea (infectious disease). In 2010, 183 middle status individuals attended private facilities for diarrhoea (infectious disease), an increase of 41%.

In 2007, 102 lower status individuals attended private facilities for diarrhoea (infectious disease). In 2010, 159 lower status individuals attended private facilities for diarrhoea (infectious disease), a jump of 56%.

The lower status RAS card holders in large numbers seem to be preferring private facilities for diarrhoea (infectious disease), then the middle status RAS card holders and high status individuals.

Provider	High Status(n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Cases	294 (58.8%)	341 (68.2%)	372 (74.4%)	1007 (67.1%)
No Treatment	11 (2.2%)	27 (5.4%)	28 (5.6%)	66 (4.4%)
Government	29 (5.8%)	39 (7.8%)	59 (11.8%)	127 (8.5%)
Private	166 (33.2%)	93 (18.6%)	41 (8.2%)	300 (20%)

Table 15: Detection and / or follow up of Chronic Diseases like Diabetes and / or Hypertension (2007).

P < 0.001 Chi Square (X^2) = 61.6

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Cases	272 (54.4%)	322 (64.4%)	351 (70.2%)	945 (63%)
No Treatment	18 (3.6%)	37 (7.4%)	35 (7.0%)	90 (6%)
Government	19 (3.8%)	23 (4.6%)	32 (6.4%)	74 (4.9%)
Private	191 (38.2%)	118 (23.6%)	82 (16.4%)	391 (26.1%)

Table 15(A): Detection and / or follow up of Chronic Diseases like Diabetes and / or Hypertension (2010).

P < 0.001 Chi Square (X^2) = 20.1

Table 15

Chi Square Test

Hypothesis 1:

H_0 *= There is no difference in Health Care Utilization for Detection and/or follow up of Chronic Diseases among different providers across Socio-Economic Classes.*

H_1= *There is difference in Health Care Utilization for Detection and/or follow up of Chronic Diseases among different providers across Socio-Economic Classes.*

X^2Cal = 61.6

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Health Care Utilization for Detection and/or follow up of Chronic Diseases among different providers across Socio-Economic Classes.

Hypothesis 2:

H_0 *= There is no difference in Health Care Utilization for Detection and/or follow up of Chronic Diseases among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

H_1= *There is difference in Health Care Utilization for Detection and/or follow up of Chronic Diseases among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.*

X^2Cal = 20.1

X^2Tab = 5.99 *I*

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. There is difference in Health Care Utilization for Detection and/or follow up of Chronic Diseases among different providers across Socio-Economic Classes, after Social Health Insurance is introduced.

In 2007, 98 individuals (39 middle status individuals and 59 lower status individuals) attended government facilities for chronic diseases like diabetes / hypertension. In 2010, only 72 individuals (37 middle status individuals and 35 lower status individuals) attended government facilities for chronic diseases like diabetes / hypertension, a reduction of 36%(-36%).

In 2007, 29 high status individuals attended government facilities for chronic diseases like diabetes/ hypertension. In 2010, only 18 high status individuals attended government facilities for chronic diseases like diabetes / hypertension, a reduction of 61%(-61%).

In 2007, 39 middle status individuals attended government facilities for chronic diseases like diabetes / hypertension. In 2010, only 37 middle status individuals, a reduction of 5%(-5%).

In 2007, 59 lower status individuals attended government facilities for chronic diseases like diabetes / hypertension. In 2010, only 35 lower status individuals attended government facilities for chronic diseases like diabetes / hypertension, a reduction of 69%(-69%).

In 2007, 134 individuals (93 middle status individuals and 41 lower status individuals) attended private facilities for chronic diseases like diabetes / hypertension. In 2010, 200 individuals (118 middle status individuals and 82 lower status individuals) attended private facilities for chronic diseases like diabetes / hypertension, a jump of 49%, although RAS does not cover diabetes / hypertension .

In 2007, 166 high status individuals attended private facilities for chronic diseases like diabetes / hypertension. In 2010, 191 high status individuals attended private facilities for chronic diseases like diabetes / hypertension, an increase of 15%.

In 2007, 93 middle status individuals attended private facilities for chronic diseases like diabetes / hypertension. In 2010, 118 middle status individuals attended private facilities for chronic diseases like diabetes / hypertension, a jump of 27%.

In 2007, 41 lower status individuals attended private facilities for chronic diseases like diabetes / hypertension. In 2010, 82 lower status individuals attended private facilities for chronic diseases like diabetes / hypertension, a jump of 100%.

The lower status RAS card holders in large numbers seem to be preferring private facilities for chronic diseases like diabetes / hypertension, then the middle status RAS card holders and high status individuals.

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Surgery	399 (79.8%)	347 (69.4%)	332 (66.4%)	1078 (71.9%)
Government	22 (4.4%)	64 (12.8%)	102 (20.4%)	188 (12.5%)
Private	79 (15.8%)	89 (17.8%)	66 (13.2%)	234 (15.6%)

Table 16: Surgery (major and / or minor) Number of times the respondent or a member in the respondent family underwent surgery during the last one year period (2007).

P < 0.001 Chi Square (X^2) = 39.4

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No Surgery	401 (80.2%)	293 (58.6%)	234 (46.8%)	928 (61.9%)
Government	18 (3.6%)	44 (8.8%)	65 (13.0%)	127 (8.5%)
Private	81 (16.2%)	163 (32.6%)	201 (40.2%)	445 (29.7%)

Table 16(A): Surgery (major and / or minor) Number of times the respondent or a member in the respondent family underwent surgery during the last one year period (2010).

Table 16

In 2007, 166 individuals (64 middle status individuals and 102 lower status individuals) underwent surgery (major/ minor) in government facilities. In 2010, only 109 individuals (44 middle status individuals and 65 lower status individuals) underwent surgery (major / minor) in government facilities, a reduction of 52%(-52%).

In 2007, 22 high status individuals underwent surgery (major / minor) in government facilities. In 2010, only 18 high status individuals underwent surgery (major / minor) in government facilities, a reduction of 22%(-22%).

In 2007, 64 middle status individuals attended underwent surgery (major / minor) in government facilities. In 2010, only 44 middle status individuals underwent surgery (major / minor) in government facilities, a reduction of 46%(-46%).

In 2007, 102 lower status individuals underwent surgery (major / minor) in government facilities. In 2010, only 65 lower status individuals underwent surgery (major / minor) in government facilities, a reduction of 57%(-57%).

In 2007, 155 individuals (89 middle status individuals and 66 lower status individuals) underwent surgery (major / minor) in private facilities. In 2010, 364 individuals (163 middle status individuals and 201 lower status individuals) underwent surgery (major / minor) in private facilities, a jump of 135%.

In 2007, 79 high status individuals underwent surgery (major / minor) in private facilities. In 2010, 81 high status individuals underwent surgery (major / minor) in private facilities, an increase of 3%.

In 2007, 89 middle status individuals attended underwent surgery (major / minor) in private facilities. In 2010, 163 middle status individuals underwent surgery (major / minor) in private facilities, a jump of 83%.

In 2007, 66 lower status individuals attended underwent surgery (major / minor) in private facilities. In 2010, 201 lower status individuals underwent surgery (major / minor) in private facilities, a jump of 205%.

The middle status and lower status patients (RAS card holders) in large numbers (135%) seem to be preferring private facilities for surgery (major / minor) after the introduction of the insurance, then the high status individuals who do not posses RAS cards.

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
Nobody	370 (70%)	344 (68.8%)	290 58.0%)	1004 (66.9%)
Govt Health Provider	130 (26.0%)	156 (31.2%)	210 (42.0%)	496 (33.1%)
Medical Provider (Govt)	0	0	0	
Medical Provider (Pvt)	0	0	0	

Table 17: Health / Medical visiting (2007).

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
Nobody	167 (33.4%)	93 (18.6%)	28 (5.6%)	288 (19.2%)
Govt Health Provider	58 (11.6%)	67 (13.4%)	43 (8.6%)	168 (11.2%)
Medical Provider (Govt)	22 (4.4%)	31 (6.2%)	19 (3.8%)	72 (4.8%)
Medical Provider (Pvt)	253 (50.6%)	309 (61.8%)	410 (82.0%)	972 (64.8%)

Table 17(A): Health visiting (2010).

$P < 0.001$ Chi Square (X^2) = 22.1

Table 17

In 2007, 366 households (156 middle status households and 210 lower status households) were attended by a government health visitor. In 2010, only 110 households (67 middle status households and 43 lower status households) were attended by a government health visitor, a reduction of 233%(-233%).

In 2007, 130 high status households were attended by a government health visitor. In 2010, only 58 high status individuals were attended by a government health visitor, a reduction of 124%(-124%).

In 2007, 156 middle status households were attended by a government health visitor. In 2010, only 67 middle status households were attended by a government health visitor, a reduction of 133%(-133%).In 2007, 210 lower status households were attended by a government health visitor In 2010, only 43 lower status individuals were attend by a government health visitor, a reduction of 388%(-388%).

Prior to introduction of RAS, health visitors from health centers use to visit the individual households. But after the introduction of RAS the health visiting seriously suffered, showed a reduction of 124%, 133% and 388% to the upper middle and lower status households respectively.

After introduction of RAS, private medical care providers from corporate empanelled hospitals (hospitals with RAS treatment facilities) started visiting the households. Never enquiring about the health, immunization status of the individuals etc, started identifying the surgical cases and started referring the RAS cases to their hospitals for needless surgery. Even if the patient is not willing the surgery, counseling is done and the cases lifted in the hospitals ambulances.

In 2010, 253 out of 500 high status households were visited by the private medical care providers, covering 51% of the high status households.

In 2010, 309 out of 500 middle status households were visited by the private medical care providers, covering 62% of the middle status households. In 2010, 410 out of 500 lower status households were visited by the private medical care providers, covering 82% of the lower status households.

Between 2007 and 2010 there is a remarkable shift. In 2007 the households used to be visited by health visitors from health centers enquiring about health, providing immunization, advising family planning etc, but, in 2010 the households are only visited by medical care providers from large RAS empanelled corporative hospitals picking up surgical cases that are covered in the RAS packages, a sudden and dangerous shift from health care to medical care.

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No insurance	481 (96.2%)	493 (98.6%)	500 (100%)	1474 (98.3%)
Pvt Insurance	19 (3.8%)	7 (1.4%)	0	26 (1.7%)
Govt (Social) Insurance	0	0	0	

Table 18: Health / Medical Insurance Cards (2007)

Provider	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
No insurance	439 (87.8%)	188 (37.6%)	7 (1.4%)	634 (42.3%)
Pvt Insurance	22 (4.4%)	11 (2.2%)	0	33 (2.2%)
Govt (Social) Insurance	39 (7.8%)	301 (60.2%)	493 (98.6%)	833 (55.5%)

Table 18(A): Health / Medical Insurance Cards (2010).

Table 18

In 2007, 7 households (7 middle status households and 0 lower status households) had private medical insurance cards. In 2010, 11 households (11 middle status households and 0 lower status households) had private medical insurance cards, a jump of 57%.

In 2007, 19 high status households had private medical insurance cards.

In 2010, 22 middle status households had private medical insurance cards, a jump of 16%.

In both 2007 and 2010, none of the lower status households had private medical insurance cards.

In 2010, 39 (8%) high status households agreed to have RAS cards.

In 2010, 301 (60%) middle status households showed their RAS cards during the survey.

In 2010, 493 (99%) lower status households showed their RAS cards during the survey.

Hysterectomy	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
2007 survey (Surgery in 2005,2006 and 2007)	21 (4.2%)	32 (6.4%)	39 (7.8%)	92 (6.1%)
2010 Survey (Surgery in 2008,2009 and 2010)	29 (5.8%)	52 (10.4%)	99 (19.8%)	180 (12.0%)

Table 19: Hysterectomy Incidence.

Table 19

HYSTERECTOMY INCIDENCE

In 2007 survey, 71 women (32 middle status women and 39 lower status women) were found to have undergone hysterectomy in preceding three years . In 2010 survey, after RAS is introduced 151 women (52 middle status women and 99 lower status women) were found to have undergone hysterectomy in the preceding three years, a jump of 113%.

In 2007 survey, 21 high status women were found to have undergone hysterectomy in preceding three years. In 2010 survey, 29 high status women were found to have undergone hysterectomy in preceding three years, a jump of 38%.

In 2007 survey, 32 middle status women were found to have undergone hysterectomy in preceding three years. In 2010 survey, 52 middle status women were found to have undergone hysterectomy in preceding three years, a jump of 63%.

In 2007 survey, 39 lower status women were found to have undergone hysterectomy in preceding three years. In 2010 survey, 99 lower status women were found to have undergone hysterectomy in preceding three years, a jump of 154%.

Between 2007 survey and 2010 survey there is increase in the incidence of hysterectomy. The increase in the incidence of hysterectomy is minimal in high status women, who do not posses RAS cards, more in middle status women, were majority posses RAS cards, very high in lower status women were every person has a RAS card.

Hysterectomy means removal of the uterus. In 2007 survey, out of the 1500 households, 92 women were hysterectomised in the preceding three years i.e, in the year 2005, 2006 and 2007(history based on records available with the patients). In 2010 survey, out of the 1500 households, 180 women were hysterectomised in the preceding three years, after RAS is introduced i.e, in the years 2008, 2009 and 2010. **Additional data is collected from the hysterectomised women.**

Age at hysterectomy 75 were below 30 years (41.7%)

57 were 30 to 35 years (31.7%)

48 were 35 to 40 years (26.7%)

The average age at which the Hysterectomy was done is 32 years.

Place of Hysterectomy: In private hospitals 165 hysterectomies were done whereas in government hospitals 15 hysterectomies were performed.

Reason for Hysterectomy: Most women were of the opinion that hysterectomy was performed on them for 'white discharge'.

Profile of the hysterectomised women

Background	% of women
Educational Status	
1. Illiterate	86
2. 1^{st} to 10^{th}	14
3. 11+	0
Caste	
1. SCs and STs	26
2. BCs	54
3. General	20
Occupation	
1. Labour	66
2. House wives	26
3. Others	8
SE status	
1. Low	67
2. Middle	29
3. Upper	4

First Doctor who advised Hysterectomy:

1. RMP (QUACK) 7%
2. Private Qualified Doctor 67%
3. Government Qualified Doctor 26%

Often it is a first person on contact that is the RMP (QUACK) who the women have approached for her complaint. Surprisingly, 32% of women were advised hysterectomy directly without any prior medication for the complaint. 66% of women were told that all the health problems will be subsided after the uterus is removed.

Reasons why the women consulted the QUACKs

1. Women preferred to consult someone easily approachable rather than the health provider's qualification. Consequently the first person the women approached for treatment was QUACK. 2. Non availability of a lady doctor in the village 3.Gender insensitive approach of the health staff in Primary Health Centre towards the women's privacy. 4. Rude behaviour of the government health staff as de motivated women to seek a care from PHCs.

Appendicectomy	High Status (n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
2007 survey (Surgery in 2005,2006 and 2007)	2 (0.4%)	1 (0.2%)	2 (0.4%)	5 (0.3%)
2010 Survey (Surgery in 2008,2009 and 2010)	10 (2.0%)	22 (4.4%)	31 (6.2%)	63 (4.2%)

Table 20: Appendicectomy Incidence.

Table 20

Appendicectomy Incidence

In 2007 survey, 3 (1 middle status individual and 2 lower status individuals) were found to have undergone appendicectomy in preceding three years . In 2010 survey, after RAS is introduced 53 (22 middle status individuals and 31 lower status individuals) were found to have undergone appendicectomy in the preceding three years, which is significant jump.

In 2007 survey, 2 high status individuals were found to have undergone appendicectomy in preceding three years. In 2010 survey, 10 high status individuals were found to have undergone appendicectomy in preceding three years, and the jump is sharp.

In 2007 survey, 1middle status individual was found to have undergone appendicectomy in preceding three years. In 2010 survey, 22 middle status individuals were found to have undergone appendicectomy in preceding three years, and the jump is sharper.

In 2007 survey, 2 lower status individuals were found to have undergone appendicectomy in preceding three years. In 2010 survey, 31 lower status individuals were found to have undergone appendicectomy in preceding three years, and the jump is sharpest.

Between 2007 survey and 2010 survey there is increase in the incidence of appendicectomy. The increase in the incidence of appendicectomy is sharp in high status individuals, who do not posses RAS cards, sharper in middle status individuals, were majority posses RAS cards, sharpest in lower status individuals were every person has a RAS card.

Additional information is collected from appendicectomised patients

Appendix is a vestigial organ. Inflammation of appendix is called as Appendicitis. Patients with appendicitis will present with pain in the lower abdomen. The main line of treatment is surgical removal called as Appendectomy. Worldwide the incidence varies from 1.26-

1.53/1000 i.e approximately 0.14/100. Appendectomy accounts for 1% of all surgical operations**.** Common age group affected is 5-30 years, below 25 years age males are more affected and after 25 years the incidence is the same in both sexes. There is no recent study to know the incidence of appendectomy in Andhra Pradesh.

In the first survey before RAS 2 cases of appendicectomy were identified to be performed in the preceding 3 years. This is found out from the records available with the patient, from patient's history and examination of the surgical scar. In the second survey after RAS, 63 cases were identified to be performed in the preceding 3 years. This incidence is alarming. Of the 63 recent appendicectomies 44 were women and 19 men. Across the globe the incidence is more in men. Disproportionately more number of women underwent appendicectomy following RAS leading to suspicion that more women with simple abdominal pain like dysmenorrhoea (painful menstruation) were subjected to appendicectomy.

Incisional Hernia	High Status(n=500)	Middle Status (n=500)	Lower Status (n=500)	Total % (n=1500)
2007 survey (Surgery in 2005,2006 and 2007)	1 (0.2%)	2 (0.4%)	4 (0.8%)	7 (0.5%)
2010 Survey (Surgery in 2008,2009 and 2010)	4 (0.8%)	19 (3.8%)	33 (6.6%)	56 (3.7%)

Table 21: Incisional (Ventral) Hernia.

Table 21

Incisional (Ventral) Hernia

In 2007 survey, 6 (2 middle status individual and 4 lower status individuals) were found to have undergone incisional hernia repair in preceding three years . In 2010 survey, after RAS is introduced 52 (19 middle status individuals and 33 lower status individuals) were found to have undergone incisional hernia repair in the preceding three years, which is significant jump.

In 2007 survey, 1 high status individual was found to have undergone incisional hernia repair in preceding three years. In 2010 survey, 4 high status individuals were found to have undergone incisional hernia repair in preceding three years, and the jump is sharp.

In 2007 survey, 2 middle status individuals were found to have undergone incisional hernia repair in preceding three years. In 2010 survey, 19 middle status individuals were found to have undergone incisional hernia repair in preceding three years, and the jump is sharper.

In 2007 survey, 4 lower status individuals were found to have undergone incisional hernia repair in preceding three years. In 2010 survey, 33 lower status individuals were found to have undergone incisional hernia repair in preceding three years, and the jump is sharpest.

Between 2007 survey and 2010 survey there is increase in the incidence of incisional hernia repair. The increase in the incidence of incisional hernia repair is sharp in high status individuals, who do not posses RAS cards, sharper in middle status individuals, were majority posses RAS cards, sharpest in lower status individuals were every person has a RAS card.

After surgery is done a scar results. If the suturing is not proper while closing the abdomen, after a few years after the surgery the abdominal contents, usually the intestine comes out through various layers of the anterior abdominal wall at the site of the scar of previous

surgery. Future incisional (also called as ventral hernia) hernia can be avoided if, during the surgery, anterior abdominal wall is closed with strong non-absorbable suture material and if infection is prevented by using proper antibiotics. Incisional (also called as ventral hernia)hernias usually occur if surgery is done by less experienced surgeons, if strong suture material is not used for closing or if infection occurs after surgery. RAS pays Rs.30,000 **(APPENDICES 2)** for treating incisional hernias. If surgery is not done properly for incisional hernia, it recurs. For recurrent incisional hernias, again RAS pays Rs.30,000. So, for doing a bad surgery the surgeon will be rewarded by another Rs.30,000. He can operate the case again and again till the credit of Rs.2lakhs is deleted from the patient's RAS card.

YEAR	Lap and Spl cases (RAS Cases)	General cases (non-RAS Cases)	Total %
2007	376 (25.4%)	1104 (74.6%)	1480 (100%)
2010	968 (50.4%)	952 (49.6%)	1920 (100%)

Table 22: HOSPITAL ANALYSIS Government Hospital: Surgeries (2007 & 2010)

P < 0.001 Chi Square (X^2) = 218.7

O.R. = 0.335 (95% C.I. 0.289 – 0.398)

YEAR	Lap and Spl cases (RAS Cases)	General cases (non-RAS Cases)	Total %
2007	76 (25.7%)	220 (74.3%)	296 (100%)
2010	592 (80.0%)	148 (20.0%)	740 (100%)

Table 22(A): HOSPITAL ANALYSIS Private Hospital: Surgeries (2007 & 2010)

P < 0.001 Chi Square (X^2) = 272

O.R. = 0.09(95% C.I. 0.063– 0.119)

Table 22 and 22(A): HOSPITAL ANALYSIS Government and Private Hospitals.

Chi Square Test

Hypothesis 1:

H_0 = There is no Over-Consumption of Medical Care by Government Tertiary Care providers following Health Insurance.

H_1= There is Over-Consumption of Medical Care by Government Tertiary Care providers following Health Insurance.

X^2Cal = 218.7

X^2Tab = 5.99 I

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. Over-Consumption of Medical Care by Government Tertiary Care providers following Health Insurance.

Hypothesis 2:

H_0 = There is no Over-Consumption of Medical Care by Private Tertiary Care providers following Health Insurance.

H_1= There is Over-Consumption of Medical Care by Private Tertiary Care providers following Health Insurance.

X^2Cal = 272

X^2Tab = 5.99 I

Since X^2 Cal is more than X^2Tab, Null Hypothesis H_0 is rejected and alternate Hypothesis H_1 is accepted i.e. Over-Consumption of Medical Care by Private Tertiary Care providers following Health Insurance.

In 2007, 1480 surgeries have performed in a Government General Hospital. In 2010, after the introduction of RAS, 1920 surgeries were performed, a jump of 30%.

In 2007, out of 1480 surgeries 376 were laparoscopic surgeries and special surgeries accounting for 25% (Surgeries covered by RAS).

In 2007 out of `480 surgeries 1104 were general cases (non-RAS cases), accounting for 75% of all surgeries.

In 2010 out of 1920 surgeries 968 were laparoscopic surgeries and special surgeries (RAS cases), accounting for 50% of all cases.

In 2010 out of 1920 surgeries 952 were general cases (non-RAS) accounting for 50% of all cases.

So, in 2007, 376 laparoscopic surgeries and special surgeries (RAS cases) were performed in Government Hospital. After RAS is introduced since all these laparoscopic and special surgeries are included 968 surgeries were performed in the year 2010 a jump of 257%, while the surgeries for general cases (non-RAS) reduced from 1104 in 2007 to 952 in 2010, a reduction of 16%.

In 2007, 296 surgeries have performed in the private corporate hospital. In 2010, after the introduction of RAS, 740 surgeries were performed, a jump of 250%. This jump is very significant, since the jump in Government Hospital (GH) is only 30%. *Is RAS indirectly helping the private corporate hospitals?*

In 2007, out of 296 surgeries 76 were laparoscopic surgeries and special surgeries accounting for 26% of all cases similar to the figures of Government Hospital (25%). *Practically there is no change in the surgery patterns between GH and private corporate hospital in 2007, prior to RAS.*

In 2007 out of 296 surgeries 220 were general cases, accounting for 74% of all surgeries, in private corporate hospital, almost similar to GH figures (75%).

In 2010 out of 740 surgeries 592 were laparoscopic surgeries and special surgeries, all included in RAS accounting for 80% of all cases, where as the RAS cases account for 50% of all cases in GH.

In 2010 out of 740 surgeries 148 were general cases accounting for 20% of all cases.

So, in 2007, 76 laparoscopic surgeries and special surgeries were performed in private corporate hospital. After RAS is introduced since all these laparoscopic and special surgeries are included 592 surgeries were performed in the year 2010 a jump of 779%, while the surgeries for general cases reduced from 220 in 2007 to 148 in 2010, a reduction of 49%.

So, although there is jump in the surgeries covered under RAS in both GH and private hospital, the jump is several fold in private hospital. There is a reduction in number of surgeries for diseases not covered by RAS and the reduction is sharper in private hospitals compared to GH.

YEAR	Pathology confirmed (n=25)	Non Cases (n=25)	Appendicectomies (n=25)
2007	22 (88.0%)	3 (12.0%)	25 (100%)
2010	17 (68.0%)	8 (32.0%)	25 (100%)

Table 23: APPENDICECTOMY ANALYSIS Government Hospital (2007 & 2010).

YEAR	Pathology confirmed (n=25)	Non Cases (n=25)	Appendicectomies (n=25)
2007	13 (52.0%)	12 (48.0%)	25 (100%)
2010	2 (8.0%)	23 (92.0%)	25 (100%)

Table 23(A): APPENDICECTOMY ANALYSIS Private Hospital (2007 & 2010).

Table 23 and 23(A):

APPENDICECTOMY ANALYSIS Government Hospital and Private Hospital

In 2007, in GH out of the 25 appendicectomies, the disease is confirmed by pathologist in 22 cases and 3 cases (14%) did not have the disease. So, surgery is performed in 14% of non cases where surgery could have been avoided.

In 2010, in GH out of the 25 appendicectomies, the disease is confirmed by pathologist in 17 cases and 8 cases (32%) did not have the disease. So, surgery is performed in 32% of non cases where surgery could have been avoided.

In 2007, in private corporate out of the 25 appendicectomies, the disease is confirmed by pathologist in 13 cases and 12 cases (48%) did not have the disease. So, surgery is performed in 48% of non cases where surgery could have been avoided.

In 2010, in private corporate out of the 25 appendicectomies, the disease is confirmed by pathologist in 2 cases and 23 cases (92%) did not have the disease. So, surgery is performed in 92% of non cases where surgery could have been avoided! Where as in the same year surgery was performed in 32% of non cases in Government Hospital.

Summary of Findings

In the First Part of Study There is difference in Hospital Admission Preference among different providers across Socio-Economic Classes [P<0.001, Chi Square (X^2) = 265.3]. There is difference in Health Care Delivery by different providers regarding the Temporary Family Planning Needs across different Socio-Economic Classes [P<0.001, Chi Square (X^2) = 141.1], difference in Health Care Delivery by different providers regarding the Terminal Family Needs across different Socio-Economic classes [P<0.001, Chi Square (X^2) = 60.3], difference in Health Care Delivery by different providers regarding Antenatal Care [P<0.001, Chi Square (X^2) = 52.7], difference in Health Care Delivery by different providers regarding Intrapartum Care [P<0.001, Chi Square (X^2) = 130.1], difference in Health Care Delivery by different providers regarding Immunization Needs [P<0.001, Chi Square (X^2) = 16.1]. More Lower Status are getting admitted in Private facilities following Health Insurance in 2010. There is a great reduction in Health Care Delivery by Government Health Providers regarding Temporary Family Planning Needs (-47%), Terminal Family Planning Needs (-98%) of the Lower Status Population. More recently (2010, compared to 2007) there is reduction in Health Care Delivery by Government Health Care Providers regarding Antenatal Care (-32%), Intrapartum Care (-72%) and Immunization Needs (-86%) of the Lower Status Population.

There is a Statistical difference in Health Care Utilization for Diarrhoeal Diseases [P<0.001, Chi Square (X^2) = 78.2], for Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension [P<0.001, Chi Square (X^2) = 61.6], Health Visiting by Health Care Providers [P<0.001, Chi Square (X^2) = 22.1], among different Health Care Providers across

Socio-Economic Classes. More recently (2010) there is reduction in Health Care Delivery by Government Health Providers regarding Diarrhoeal Diseases (-43%), Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension Needs (-69%) of the Lower Status Population. The Households specially those of Middle Status and Lower Status Population used to be visited by the Government Health Care Providers, but, after the Social Medical Insurance is introduced the Health Visiting is neglected [$P<0.001$, Chi Square (X^2) = 22.1].

The survey has found that the Medical Insurance Cards - Rajiv Aarogyasri Cards (RAS Cards) which are meant for Lower Socio-Economic Households are claimed by some of the Middle Status and High Status Households. 8% of High Status Households agreed to have possessed RAS Cards, 60% of Middle Status Households are having the RAS Cards and 99% of Lower Status Households posses them.

The survey found excess Medical Care Delivery following Medical Insurance. In 2010 survey, Post Insurance, Upper Status Households many of them who don't have Insurance Cards showed a increased Hysterectomy incidence (Removal of Female Reproductive Organ = Uterus) of 38%, Middle Status Households (some of them have Insurance Cards) showed a increased incidence of 63% and Lower Status Households (almost every Household with Insurance Cards) showed a increased incidence of 154%. The survey found increase incidence of removal of Appendix (for disease Appendicitis) following Medical Insurance. The jump is many fold among Lower Socio-Economic Status, in 2007 survey 2 individuals had the Appendix removed, while in 2010 survey 31 individuals had the Appendix removed. Similar is the case with Surgery for Incisional (Ventral) Hernia, in 2007 survey 4 individuals from the Lower Status Households were found to have the Surgery performed while 2010 survey 33 individuals were found to have undergone the surgery.

In the Second Part of the study which is Hospital Analysis to study the Surgical Interventions in a Government Hospital and in a Private Corporate Hospital, before and after the Medical Insurance, it is found that in 2007, 1480 surgeries were performed in the Government Hospital, while in 2010, 1920 surgeries were performed, a jump of 30%. The jump was clearly more for the surgeries for Insurance covered Diseases, 257% (from 376 surgeries to 968 surgeries), while surgeries not covered by Insurance showed a decline -16% (from 1104 to 952). In 2007, 296 surgeries were performed in Private Corporate Hospital, while in 2010, 740 surgeries were performed, a jump of 250%. The jump was clearly more for the surgeries for Insurance covered Diseases, 779% (from 76 surgeries to 592 surgeries).

In the Third Part of the study which is Appendicectomy Analysis, it is found that surgery was performed in 14% of non-cases (Person not having Appendicitis) in Government Hospital in 2007. In 2010, Post Insurance, Appendicectomy was performed in 32% of non-cases in the same Hospital. In 2007, in Private Corporate Hospital Appendicectomy was performed in 48% of non-cases, while in 2010, Post Insurance, the surgery was performed in 92% of non-cases in the same Hospital.

Chapter 5 : Discussion

DISCUSSION

The first biggest health care delivery and insurance experiment was conducted in US in1970s, the Research and Development (RAND) study. The population is divided into groups. For one of the groups health insurance is totally free. For others, one group had 25% co - insurance, another group 50% co-insurance, at another 95% co-insurance. One of the findings was "uninsured had only about 2/3^{rds} the number of OPD visits per year compared to the insured". Another finding of RAND study reported by Newhouse (1993)[68] was "annual hospital visits per capita of 0.13 were noticed in Americans in totally free insurance group were as annual hospital visits per capita was reduced to 0.11 in Americans who had 25% co-insurance and the annual hospital visits per capita were further reduced to 0.09 in Americans who had 50% co-insurance and annual hospital visits per capita is much less in uninsured Americans".

Although our results are similar to the RAND study to some extent, some of the results are more than surprising, they are alarming.

Our study consisted of three parts. First part of study is Surveys. Two surveys were conducted on the same population, the first survey in 2007, and the second in 2010 after the introduction of Rajiv Aarogyasri (RAS). The health care utilization by high, middle and lower status households, and the health care utilization in both rural and urban areas carefully analysed.

The second part of study is analysis of the surgery patterns in a Government Hospitals (GH) private corporative hospital in Secunderabad before and after introduction of RAS.

The third part of study is analysis of the most commonly performed surgery, appendicectomy, in both government hospital (GH) and private hospital to find out the genuinity.

Most people mistakenly believe 'Health care' and 'Medical care' are synonymous. Health care is both 'preventive care' and 'curative care', where as medical care is purely 'curative care'. To avoid the confusion a new name is better given to 'preventive care' say, "LACIDEM CARE" (new word coined). More demarcation is needed, and health care includes lacidem care and medical care.

Progress in medicine may be categorized according three levels of technology. First is non-technology helping patients cope with illness that have no known cure.

Half way technology represents the next level of medical progress, practitioners treat patients by trying to post pone its ill effects. Surgery, Radiation and Chemotherapy are half way technologies available at *tertiary hospitals*. Organ transplantation is also half way technology. Half way technology is cost increasing.

Finally, high technology becomes available when scientists understand the disease mechanism and develop treatments that either prevents or cures the malady. High technology constitutes a shift in attention from the consequences of a disease to its causes. Immunizations for protecting individuals against contracting a disease and antibiotics for treatment of bacterial infections are examples of high technology. *High technology is being delivered by the primary health centres. High technology is cost decreasing.*

Regarding health insurance in India, ESIS is started in 1952, CGHS in 1954, voluntary health insurance in 1986 and privatization of health insurance started in 1999. Yeshasvini Health Insurance was started in Karnataka in 2003, Rajiv Aarogyasri in AP in 2007, Rashtriya

Swasthya Bima Yojana in 2008, Kalaignar in Tamilnadu in 2009, Vajpayee Arogyasri in Karnataka in 2010 and RSBY Plus in Himachal Pradesh in 2010.

Called as Rajiv Aarogyasri health insurance, can we call it health insurance? It is, in fact, medical insurance. Can it be called even medical insurance? It covers just less than 10% of medical diseases. It can be better called as "partial medical insurance". Spending tax payer's money for cost increasing half way technology treatments available at tertiary medical centres, and more reasonable high technology which is being delivered by the primary health care centres are taking a back seat.

Andhra Pradesh is reputed to be the first state which is spending a well over half of all government expenditure on tertiary care. This is a clear pointer to the direction of priorities; where governments have appeared to fall prey to distorted consumer demand, misguided medical profession and the medico industrial complex.

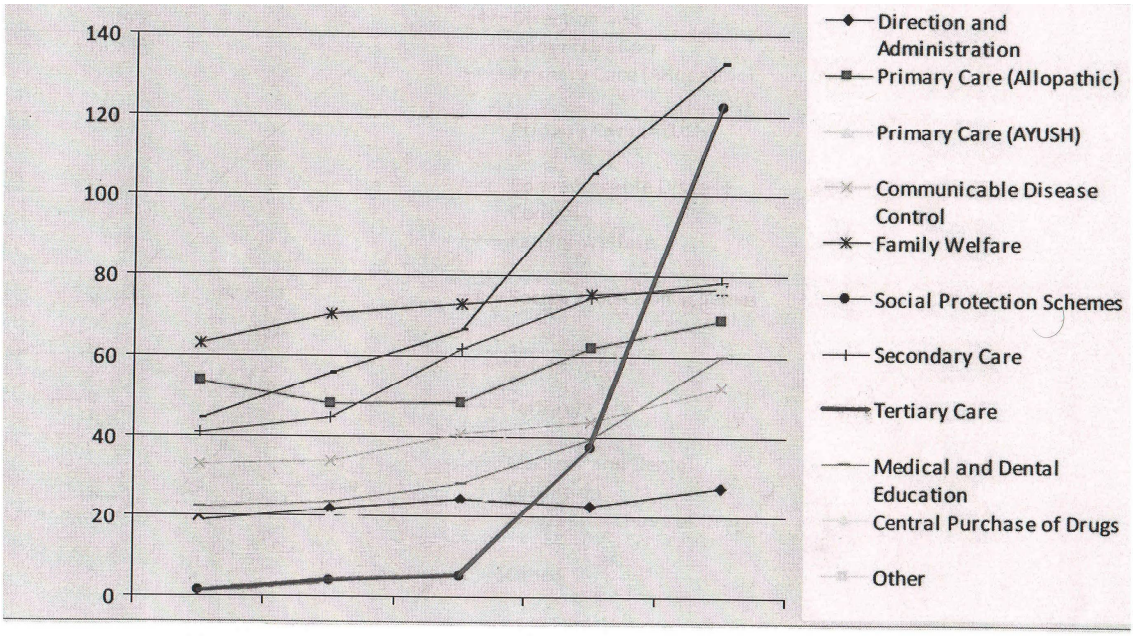

Figure 4: Medical Expenditure in A.P. From 2007 to 2010

Several western industrial countries that have used this model seem to have realized the negative development. Wagstaff & Lindelow (2008) [58] reported that insurance appears to encourage people to seek more care from the expensive tertiary care providers, Wagstaff, et. Al (2009) [59], showed both outpatient and inpatient expenses of the households seems to have gone up considerably post-insurance. There is no study demonstrating both demand side and supply side moral hazards generated by the medical insurance schemes, which require further study. There is no study to understand the pattern of moral hazard, adverse selection, fraud and mechanisms deployed to control imperfections in the medical market.

The premium is RAS is Rs.267, completely paid by the government, covers up to Rs.2 Lakhs. Breadth of coverage is denoted by the percentage of population covered by the scheme. In RAS breadth is large, covering 85% of population. Depth of coverage means extent of benefit packages that is, the number of diseases covered. The depth is very minimal is RAS, rare and less frequent diseases are covered. Hence RAS is better called as “partial medical insurance”. Height of coverage means share of medical care costs, the question doesn’t arise since RAS is entirely a state scheme.

RAS has a hospitalization expense of Rs.27,848 per episode which is larger than mean hospitalization expense of private health insurance industry which is at Rs.19,637. The mean hospitalization expense of a Yeshasvini health insurance scheme of Karnataka is Rs.8,240, the mean hospital expenditure in RSBY scheme is Rs.4,262. The average hospitalization expenses of the uninsured in India are Rs. 8,851 (Rs.11,553 for treatment in private hospitals and Rs.3,877 in government hospitals). So, the current hospitalization rates of the RAS card holders in Andhra Pradesh is four times higher than what an uninsured would have paid and more than what insured would have paid under private health insurance.

For out patient's consultations, between the year 2007 and 2010 there is no significant change in the number of OP consultations among high status individuals, since there is no change in their insurance status. Between the years 2007 and 2010 there is 23% jump in number of OP consultations among middle and lower status individuals, since all of them are covered by RAS.

For hospital admissions, between the year 2007 and 2010 there is no significant change in the number of admissions among high status individuals, since there is no change in their insurance status. Between the years 2007 and 2010 there is 99% jump in number of hospital admissions among middle and lower status individuals, since all of them are covered by RAS.

There are some interesting observations in the health care utilization among the middle and lower status households before and after introduction of RAS. The OPD consultations increased by 23% while the hospital admissions increased by 99%.

For preference for OP consultations, between government and private facilities, between the year 2007 and 2010 there is no significant change among high status individuals, since there is no change in their insurance status. For preference for OP consultations, the middle status and lower status RAS card holders, between government and private facilities, between the year 2007 and 2010, there is 35% jump in using private facilities and 72% reduction in using government facilities.

For preference for hospital admissions, between government and private facilities, between the year 2007 and 2010 there is no significant change among high status individuals, since there is no change in their insurance status. *For preference for hospital admissions, the middle status and lower status RAS card holders, between government and private facilities,*

between the year 2007 and 2010, there is 324% jump in using private facilities and only 20% jump in using government facilities.

For temporary family planning needs, between 2007 and 2010, there is a drop of 35% in using the government facilities, by the middle status individuals and lower status individuals. Between 2007 and 2010, there is a drop of 45% in using the government facilities, by the high status individuals. So, between 2007 and 2010, there is a drop in the individuals using the government facilities among all the social groups.

Regarding Antenatal care, between 2007 and 2010, there is drop in individuals using the government facilities among all the social groups.

Regarding Intrapartum care, between 2007 and 2010, there is drop in individuals using the government facilities among all the social groups.

Regarding Terminal methods of family planning (Tubectomy / Vasectomy), between 2007 and 2010, there is drop in individuals using the government facilities among all the social groups.

Regarding Immunization, between 2007 and 2010, there is drop of 86% (-86%) middle and lower status individuals using the government facilities. There is a drop of 50% (-50%) high status individuals using the government facilities.

Regarding health care utilization for Diarrhoeal disease (Infectious disease), between 2007 and 2010, there is drop of 61% (-61%) middle and lower status individuals using the government facilities. There is a drop of 54% (-54%) high status individuals using the government facilities.

Regarding health care utilization for undergoing surgery, between 2007 and 2010, there is drop of 52% (- 52%) middle and lower status individuals using the government facilities. There is a drop of 22% (-22%) high status individuals using the government facilities.

The middle and the lower status patients (RAS card holders) in large numbers (+135%) prefer private facilities for surgery after the introduction of insurance, than the high status individuals (+3%) who do not posses RAS cards.

Regarding health visiting by government health visitors, between 2007 and 2010, there is a sharp drop of 233% (-233%) to the middle and lower status households. There is a drop of 124% (-124%) house visiting by government health visitor to the high status households.

Between 2007 and 2010 there is a remarkable shift. In 2007 the households used to be visited by health visitor from health centres enquiring about health, providing immunization, advising family planning etc, but in 2010 the households are only visited by medical care providers from large RAS empanelled corporative hospitals picking up surgical cases that are covered in the RAS packages, a sudden and dangerous shift from health care to medical care. This is a clear pointer to the direction of priorities; where government have appeared to fall prey to a distorted consumer demand, misguided medical profession and the medico-industrial complex.

The state's 85% population is covered by RAS and impact of private insurance is negligible in the state.

Between 2007 survey and 2010 survey there is increase in the incidence of hysterectomy. The increase in the incidence of hysterectomy is minimal in high status women (+38%), who do not posses RAS cards, more in middle status women (+63), were majority posses RAS cards, very high in lower status women (+154) were every person has a RAS card.

When RAS is introduced the package for hysterectomy (LAVH) is Rs. 35,000. Later, the package is reduced to Rs. 30,000(Appendices 1) in the year 2009. Again, the package amount is reduced to Rs. 20,000 to reduced moral hazard. Even this Rs. 20,000 is very high. CGHS and ESIS pays Rs. 13,000, Yeshasvini pays Rs. 6000 and RSBY pays Rs.10,000 for hysterectomy. The RAS should not only reduce the package amount further, but also adapt a new method to avoid unnecessary surgeries. The most common cause for hysterectomy following RAS is white discharge. The causes of white discharge can be many fold, the reasons can be found in the text books of gynaecology. One of the reasons could be pelvic inflammatory disease (PID). PID is an infection of the upper female genital tract; treatment depends on the cause of infection and generally subsides with the use of antibiotics. This disease is common in young women who are sexually and reproductively active. Another cause of white discharge is Cervicitis. Cervicitis represents a form of focal sepsis, is brought about by the introduction of infection during abortion or childbirth due to lacerations of the cervix. Cervicitis in the early stages can be treated by antibiotics.

Early hysterectomy can harm women's health. Menopause is defined as the time of cessation of ovarian function resulting in permanent stoppage of menstrual cycles. Most women reach menopause between the ages of 45-55, with the average age around 50. Early menopause occurs after surgery since blood supply to the ovaries gets reduced after removal of the uterus. During reproductive years the hormones produced in the ovary are estrogen, progesterone, estrogen, and inhibin and in small amounts testosterone and Androsterone (can get converted to weak estrogen in the fat tissue). Menopausal ovary continues to provide Androsterone which gets converted to oestrone. Though weaker than estrogen (10 times less potent than regular estrogen), oestrone is capable of exerting estrogenic effect on the target tissues. Estrogen is the hormone that helps prevent calcium loss and bone breakdown in

women. Due to a drop in estrogen level in the immediate five years of menopause a women may loose up to 15-25% of bone mass, leading to mild to moderate or severe osteoporosis. When the natural onset of menopause comes earlier than expected or when it is caused by reduced blood supply to ovaries following surgical removal of uterus. A women's estrogen protection is reduced for a longer period of time span compared to natural menopausal situations.

Out of the 165 patients who underwent hysterectomy in private hospitals the average expenditure incurred by the family towards the surgery is Rs. 4500 on an average. Although surgery is totally free the private hospitals charged the patients for investigations, asked patients to procure blood from private blood banks, where asked to buy medicines etc.

Out of the 15 patients who underwent surgery in government hospitals expenditure incurred in the process of hospitalization and surgery on an average is around Rs. 1200. Women opted for a particular hospital after being referred to them by their QUACK/private doctor/neighbour/friend. In a majority of cases the health care provider whom women had first contacted had a greater influence on the selection of the hospitals. Women and her family members believe that the personal relationship between the QUACK and the hospital where hysterectomy is done will ensure better care for them. QUACKs believe that they are doing a favour to women by referring them to a familiar hospital. Though the QUACKs did admit that they were paid an honorarium for referring a patient to a hospital, they insist that their referral is well intended. We could question some of the QUACKs in villages and most of them were willing to reply.

Study undertaken by Sapna Desai (2011)[70] in Gujarat showed definite increase in incidence in Hysterectomy among insured women. The Gujarat survey is conducted in 2010, 2214 rural women, 1641 urban women, insured and uninsured, in low income households in

Ahmadabad, Gujarat. Insurance is provided by SEWA, a women organization that operates a community based health insurance scheme. The incidence of hysterectomy in uninsured women is 7.2% (rural women) and 4.0%(urban women) whereas in the insured the incidence is 9.8(rural women) and 5.3%(urban women).

Regarding Appendicectomy, between 2007 survey and 2010 survey, there is increase in the incidence of appendicectomy. The increase in the incidence of appendicectomy is sharp in high status individuals, who do not posses RAS cards, sharper in middle status individuals, were majority posses RAS cards, sharpest in lower status individuals were every person has a RAS card. In the first survey before RAS 2 cases of appendicectomy were identified to be performed in the preceding 3 years. This is found out from the records available with the patient, from patient's history and examination of the surgical scar. In the second survey after RAS, 63 cases were identified to be performed in the preceding 3 years. This incidence is alarming. Of the 63 recent appendicectomies 44 were women and 19 men. Across the globe the incidence is more in men. Disproportionately more number of women underwent appendicectomy following RAS leading to suspicion that more women with simple abdominal pain like dysmenorrhoea (painful menstruation) were subjected to appendicectomy.

Between 2007 survey and 2010 survey there is increase in the incidence of incisional (ventral) hernia repair. The increase in the incidence of incisional hernia repair is sharp in high status individuals, who do not posses RAS cards, sharper in middle status individuals, were majority posses RAS cards, sharpest in lower status individuals were every person has a RAS card.

Hospital analysis was undertaken in general hospital and a private corporative hospital in the years 2007 and 2010 after RAS is introduced. *Between 2007 and 2010 after RAS is*

introduced there is a 30% jump in number of surgeries performed in general hospital. Between 2007 and 2010 after RAS is introduced there is a 250% jump in the number of surgeries performed in the private hospital. Is RAS is indirectly helping private corporative hospitals?. Practically there is no change in the surgery patterns between GH and private corporative hospital in 2007, prior to RAS. But there is a sharp change post – RAS.

In 2007 *in GH* appendicectomy is performed in 14% of non cases. But, RAS has made difference, perhaps because all the surgery team members of government hospitals also incentive money, and *in 2010 appendicectomy is performed in 32% of non cases. Is this rational economic behaviour?*.

The story is different in private corporate hospital. In 2007 appendicectomy is performed in 48% of non cases. But, RAS as made more difference in this private hospital and *in 2010 appendicectomy is performed in 92% of non cases and all of them are RAS card holders. Is this not moral turpitude?*.

In Andhra Pradesh, over 80% of the hospitalisation under RAS takes places in private hospitals. RAS had spent Rs. 1,200 cores and most money being diverted tertiary care private hospitals.

Most of the chronic diseases like hypertension can be controlled if anti hypertensive drugs are available and given free by the primary health centres to the RAS card holders in villages. The drugs are not available. Most of this patients in naturally developed stroke (clot in the brain) or heart attack (clot in coronary arteries). RAS cards does not provide anti hypertensive drugs which costs only a few rupees; but RAS cards provide Rs. 2Lakhs for strokes and heart attacks. Moreover, 25% of these emergency patients die before they reach

tertiary centres. Another 25% will die during the course of the treatment. Surprisingly, health status of A.P. deteriorated after RAS is introduced (Table 4 and also Appendices 10).

Health status will improve if there is health insurance (i.e., insurance covering the preventive care and primary care) RAS is partial medical insurance scheme which will not cover preventive care, primary care or secondary care and health status instead of improving can deteriorate represented in Figure 5.

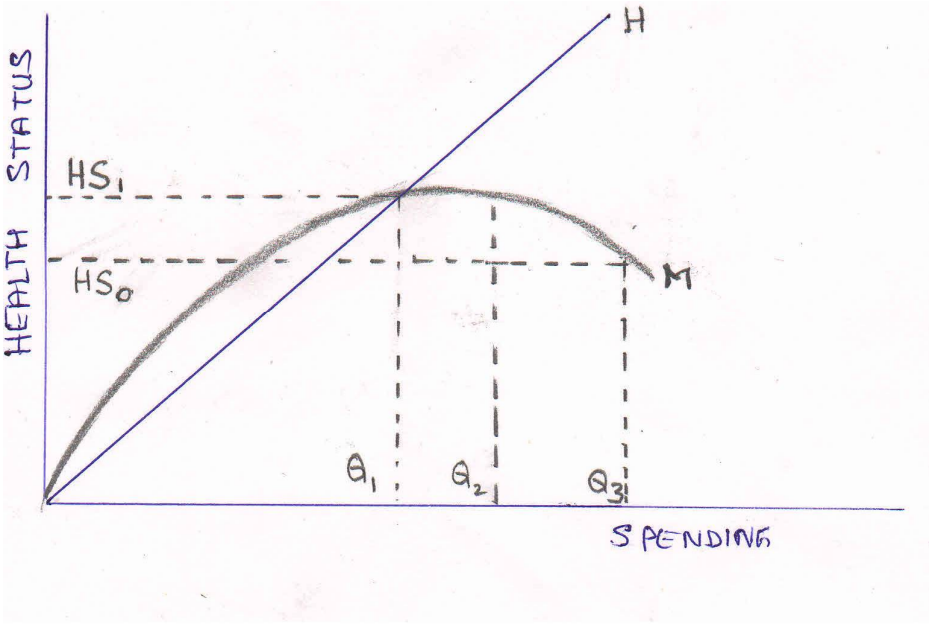

Figure 5: Relationship between Health Status, Health Care Spending and Medical Care Spending.

Medical care spending (M line in the Figure 5) strictly speaking, spending on secondary care and spending on tertiary should be considered as medical care spending. Rajiv Aarogya Sri is partial medical insurance scheme that covers only rare disease and tertiary care. Spending Q_1 on medical care health status HS_1 is reached. Spending further on medical care, Q_2, the health status is at the same place i.e HS_1. Spending even further on medical care, Q_3, health status is reduced, HS_0. The present spending by RAS of A.P is perhaps Q_3. There is many fold increase in tertiary care spending in Andhra Pradesh which is already shown in figure 4 earlier. Health status which is usually measured by calculating Life Expectancy at Birth, Infant Mortality Rate, etc, is the least in Andhra Pradesh compared to any other state of South India (Table 4, discussed earlier) Infant Mortality Rate is very high in Andhra Pradesh(Appendices 10). *The more is spent on medical care, the lowest will be health status.* This rule applies to even the USA. Per capita Medical care spending in US is the highest compared to any other developed country and health status in US is lowest (Table 3, discussed earlier)

Health care spending (H line in Figure 5) strictly speaking, spending on preventive care and spending on primary health care should be considered as health care spending. The more is spent on health care, better health status will be reached. The state of Kerala does not have any ambitious medical insurance scheme, It has got one of the best primary health care system in South India and its health status is the best (Table 4).

Some politicians argue that Aarogya Sri which covers tertiary care will fetch votes even if the health status does not improve. This may not be true. Take the case of Tamil Nadu model, which is credited being a pioneer on several fronts in strengthening public health systems and especially on primary care, unfortunately went on to replicate its neighbour (Andhra Pradesh) in starting Kalaignar's medical insurance scheme in the year 2009 by the DMK govt with eye on elections, and what happened in the elections?

The Rajiv Aarogya Sri (RAS) scheme picture will be better understood if the news paper clippings are any indication.

'Aarogya Sri helping only private hospitals' said planning commission member Abhijit Sen in a meeting in New Delhi, speaking to the chief secretary of A.P Mr. S.V. Prasad. Reported in the Times of India Hyderabad March 14, 2010 (Appendices 3).

'Hospitals rake in Rs. 10 Crore through uterus surgeries' hysterectomy operations are carried out by private hospitals in collusion with private diagnostic centres which are suspected to have given fake biopsy reports. The trust had cut the reimbursement amount from Rs. 30,000 to Rs. 20,000 for hysterectomy. Reported Deccan Chronicle, Hyd. on August 28, 2010 (Appendices 4).

'Private hospitals thrive on needless surgery' just 3.5 % of women admitted with gynaecological problems in government hospitals undergo hysterectomy surgery while 30 – 40 % do so in private hospitals. Out of every 100 patients admitted with abdominal pain, only 3 or 4 patients actually require appendicitis operation. Data shows that around 50 % of such patients are operated upon in private hospitals. Reported Deccan Chronicle, Hyd. on September 1, 2010 (Appendices 5).

'Aarogyasri patients turn guinea pigs' Doctors say there is a surge in the number of companies headed to the state and also the number of trials being carried out, "because there are a lot of guinea pigs here". The poor literacy level of Aarogyasri beneficiaries has given a lucrative but worrisome spin to health care business in the state – city hospitals are now hard selling their patient numbers to bag clinical trail projects from international pharma firms. Reported Times of India, Hyderabad, February 10, 2011 (Appendices 6).

‘132 ailments under Aarogyasri to be treated only at govt hospitals’. About 50 of 340 Aarogya Sri Empanelled hospitals now face closure. “If entrusted to government hospitals, the misuse will not occur”, said Srikanth the CEO of Aarogya Sri trust. He told that procedures including hysterectomy and appendicectomy would now be reserved for government hospitals. Reported Times of India, Hyderabad, July 16, 2011 (Appendices 7).

‘ Poor outnumber AP’s populations’. There are more below poverty line(BPL) families than the total population’s of A.P. Reported Times of India, Hyderabad, September 23, 2011 (Appendices 8).

‘Aarogya Sri trust files FIR against Kurnool hospital’. The Aarogya Sri health care trust has lodged a complaint with the Jubilee Hills police station (FIR No. 571/2011) under Section 406 and 420 of the IPC against the Kurnool Heart and Brain Centre for resorting to medical malpractice. Reported Deccan Chronicle, Hyd. on December 17, 2011 (Appendices 9).

In Guntur District of A.P, three empanelled hospitals Nandana Critical Care Centre, BMR Multi- Specialty Hospital and Anjireddy Multi- Specialty Hospital were blacklisted for performing thousands of unnecessary operations. It was found that out of 1,141 cases, 68 % (776) were performed on women in the group of 21 to 40 with 584 cases shared by these three hospitals. The Director General of Vigilance recommended the removal of three hospitals from the list and cancellation of their licenses [69].

‘ Infant mortality still high in A.P’. Andhra Pradesh continues to hold the dubious distinction of having the highest Infant Mortality Rate(IMR) in South India as per the latest Sample Registration System (SRS) survey statistics for 2010. Reported Times of India, Hyderabad, December 30, 2011 (Appendices 10).

The government of Andhra Pradesh Aarogya Sri health care trust vide circular number AST/560/F43/2011-2012, dated 26.07.2011, removed 133 procedures from the preview of private hospitals stating minimizing moral hazard has one of the reasons, and reserved them to be performed by government hospitals alone (Appendices 11).

We are of the opinion that in future these 133 RAS procedures which are reserved to be performed in the government hospitals will also be removed in the future. The government surgeons of Andhra Pradesh are amongst the best paid. These government surgeons are also allowed to private practice in private hospitals. They also receive incentive for performing RAS operations (Appendices 12). Some of the government surgeons have reportedly received cheques for amount exceeding Rs.10Lakhs from RAS. Being already paid UGC salary and also being allowed to do unlimited private practice there is no point in giving Lakhs of Rupees as RAS incentive. Government surgeons are supposed to perform surgeries free of cost since they are paid salary; then why pay RAS money which is some times three or four times their regular salary? Perhaps this will be the future line of thinking by the government; and the ambitious RAS partial medical insurance scheme will be history.

Summary of Discussion

Our findings are comparable to the findings of the RAND Study. RAND Study is the first biggest Health Care Delivery and Insurance experiment which was conducted in US in 1970s. The Population is divided into groups. In one Group Health Insurance is totally free, other Group had 25% Co-Insurance, one Group had 50% Co-Insurance and another Group 95% Co-Insurance. Annual Hospital visits Per Capita is highest in totally free Insurance Group, visits reduced in Americans who had 25% Co-Insurance, further reduction in number of Hospital visits are seen in Americans who had 50% Co-Insurance and least number of Hospital visits in those who had 95% Co-Insurance.

Findings from first part of our study show that there is a statistical difference in Hospital Admission preference among different Health Care Providers among different Socio-Economic Classes. Admission increased after the Social Medical Insurance is introduced in Andhra Pradesh. The Government Health Facilities admitted 8% more Lower Status patients following Insurance, while Private Health Facilities admitted 540% more Lower Status patients, showing excess Delivery of Medical Services especially by the Private Health Care Providers. In the recent years, (2010), there is reduction in Health Care Utilization from Government Health Care Providers by the Lower Status Population. The Temporary Family Planning Needs showed a reduction of 47%(-47%), Terminal Family Planning Needs showed a reduction of 98%(-98%), Antenatal Care showed a reduction of 32%(-32%), The Intrapartum Care showed a reduction of 72%(-72%), The Immunization Care showed a reduction of 86%(-86%), The Health Care Utilization for Diarrhoeal Diseases and other infectious Diseases in case of Emergencies showed a reduction of 43%(-43), The Health Care Utilization in respect to Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension showed a reduction of 69%(-69%) and the Health Visiting of Households by Government Health Providers showed a reduction of 388%(-388%). The above data clearly showed that the Government is not giving priority to the Health Care Delivery by the Government Health Care Providers.

Further Findings from first part of our study showed excess Medical Care Delivery following Medical Insurance. Sapna Desai Study (2011) in Gujarat showed definite increase in incidence in Hysterectomy among Insured Women. In her survey, 2214 Rural Women, 1641 Urban Women, insured and uninsured, in low income Households in Ahmadabad, Gujarat is studied. Insurance is provided by SEWA, a Women Organization that operates a community based Health Insurance Scheme. The Incidence of Hysterectomy in uninsured women is 7.2%

(Rural Women) and 4.0% (Urban Women) whereas in the insured the incidence is 9.8(Rural Women) and 5.3% (Urban Women). Our survey showed sharp increase incidence of Hysterectomy, Post Insurance. Upper Status Households many of them who don't have Insurance Cards showed a increased Hysterectomy incidence (Removal of Female Reproductive Organ = Uterus) of 38%, Middle Status Households (some of them have Insurance Cards) showed a increased Incidence of 63% and Lower Status Households (almost every Household with Insurance Cards) showed a increased Incidence of 154%. Early hysterectomy can harm women's health. Menopause is defined as the time of cessation of ovarian function resulting in permanent stoppage of menstrual cycles. Most women reach menopause between the ages of 45-55, with the average age around 50. Early menopause occurs after surgery since blood supply to the ovaries gets reduced after removal of the uterus. During reproductive years the hormones produced in the ovary are estrogen, progesterone, estrogen, inhibin and in small amounts testosterone and Androsterone (can get converted to weak estrogen in the fat tissue). Menopausal ovary continue to provide Androsterone which gets converted to oestrone. Though weaker than estrogen (10 times less potent than regular estrogen), oestrone is capable of exerting estrogenic effect on the target tissues. Estrogen is the hormone that helps prevent calcium loss and bone breakdown in women. Due to a drop in estrogen level in the immediate five years of menopause a women may lose up to 15-25% of bone mass, leading to mild to moderate or severe osteoporosis. When the natural onset of menopause comes earlier than expected or when it is caused by reduced blood supply to ovaries following surgical removal of uterus. A women's estrogen protection is reduced for a longer period of time span compared to natural menopausal situations.

Our survey found Excess Delivery of Medical Care (in the form of increase incidence of Appendicectomy) following Insurance. The jump is many fold among Lower Socio-

Economic Status. In 2007, survey 2 individuals had the Appendix removed, while in 2010, survey 31 individuals had the Appendix removed. Similar is the case with Surgery for Incisional (Ventral) Hernia, in 2007 survey 4 individuals from the Lower Status Households were found to have the Surgery performed while 2010 survey 33 individuals were found to have undergone the surgery.

In the Second Part of the study which is Hospital Analysis to study the Surgical Interventions in a Government Hospital and in a Private Corporate Hospital, before and after the Medical Insurance, it is found that surgeries covered by Insurance showed a jump of 257%, while the surgeries not covered by Insurance showed a decline of -16% in the Government Hospital. The surgeries covered by Insurance showed a jump of 779% in Private Corporate Hospital. *It is clear that Insurance appears to encourage people to seek more Care from the expensive Private Corporate Hospital compared to the Government Hospital. There seems to be tilting the funds to the already flourishing Private Sector.*

In the Third Part of the study which is Appendicectomy Analysis it is found that Post Insurance surgery was performed in 92% of non-cases by the Private Corporate Hospital. This is a best example of how the Tax Payers money is being diverted to Private Corporate Hospital via Social Medical Insurance. *If stringent regulatory structures and an effective implementation mechanism are put in place, the deleterious effect of Voluntary Private Health Insurance could be ameliorated to some extent.*

There is tendency to over utilize and over prescribe Medical Care. Both demand-side and supply-side Moral Hazards generated by the Insurance Scheme.

Our findings correlate with the findings of Duggal R. (2011) [71] who concluded that health insurance in an unregulated environment can only lead to unethical practices, further victimising the patient. Further, publicly financed healthcare which operates in an

environment regulating both public and private healthcare provisioning is the only way to assure access to ethical and equitable healthcare to people.

Our findings also correlates with the findings of Dutta M, Husain Z. (2013) [72] who concluded that health insurance is unable to eliminate the inequities in accessing healthcare services that stem from disparities in SES. In fact, Insurance aggravates inequity in the healthcare market. The study is based on unit-level data from the 2005-06 Morbidity and Health Care Survey undertaken by National Sample Survey Organization.

Our findings also correlates with the findings of Fan VY, Karan A, Mahal A. (2012) [73] who concluded that Aarogyasri is not benefiting scheduled caste and scheduled tribe households as much as the rest of the population.

Our findings also correlates with the findings of Forbes DJ, (2012) [74] who concluded that Rural Health Insurance schemes are financially and culturally precarious. Enthusiastically importing these ventures into rural scenarios fragments vulnerable healthcare systems that have served and survived many other threats. Our findings are similar to the study of Sunita Reddy, Immaculate Mary (2013) [75] who concluded that the analysis of the annual budget spent on the surgeries in private hospitals compared to tertiary public hospitals shows that the current scheme is not sustainable and pose huge burden on the state exchequers. The private hospital association <<SQ>> s in AP, further acts as pressure groups to increase the budget or threaten to withdraw services. Thus, profits are privatized and losses are socialized.

LIMITATIONS OF THE STUDY: 1. All the villages surveyed are with in 100kms radius from Hyderabad city. The information could be different if far off villages are included in the study. 2. For analysis of surgical patterns before and after the Rajiv Aarogya Sri only one general hospital and only one corporate hospital are included in the study which is a limitation. 3. Only one surgical procedure, appendicectomy is analysed in detail which is limitation.

Chapter 6: Conclusions

CONCLUSIONS:

1. In the year 2007, the households of all social groups used to be visited by a health visitor from primary health centre providing immunization, advising family planning, providing antenatal care, enquiring about infectious diseases and enquiring for presence of chronic diseases like hypertension, diabetes etc. The members of the households of all social groups used to avail the public health care delivery, to some extent.

2. After 2007, instead of strengthening cost-decreasing high technology (high technology constitutes a shift in attention from the consequences of disease to its causes. Immunizations for protecting individuals against contracting a disease and antibiotics for treatment of bacterial infections are examples of high technology) which is available in Primary Health Centres, started diverting attention to delivering cost increasing Half way technology (here hospitals treat patients by trying to postpone the ill effects of disease. Surgery, radiation and chemotherapy for cancer, organ transplantation are examples of Half way technology)by introducing Rajiv Aarogya Sri (RAS), there by diverting crores of rupees of tax payers money to already flourishing private corporate tertiary care centres, neglecting the already fund-starving public hospitals. Thus the government appeared to have fallen pray to a misguided medical profession and medico-industrial complex.

3. Unlike some health schemes, RAS does not cover out-patients, preventive care or secondary care. The scheme covers very few low-frequency, rare diseases. Instead of calling health scheme, it is better to call RAS a partial medical insurance scheme. RAS has a hospitalization expense of Rs.27,848 per episode which is larger than mean hospitalization expense of private health insurance industry which is at Rs.19,637. The mean hospitalization expense of a Yeshasvini

health insurance scheme of Karnataka is Rs.8,240, the mean hospital expenditure in RSBY scheme is Rs.4,262. The average hospitalization expenses of the uninsured in India is Rs. 8,851 (Rs.11,553 for treatment in private hospitals and Rs.3,877 in government hospitals). So, the current hospitalization rates of the RAS card holders in Andhra Pradesh is four times higher than what an uninsured would have paid and more than what insured would have paid under private health insurance. The Andhra Pradesh government is spending a well over half of government expenditure on tertiary care (Figure 4). Which is not sustainable in the future.

4. Regarding health care delivery after RAS is introduced, the utilization of government facilities is reduced and the utilization of private facilities increased many fold. The private hospital admissions increased by 324% among card holds. There is a 45% drop in using temporary family planning needs, 86% drop in using immunization, a 61% drop in using government health centres for infectious diseases, a 36% drop in visiting government health centres for detection/ treatment/ follow-up of chronic diseases like hypertension and diabetes by the RAS card holders. While the health visiting of households by government health visitors dropped by 223%, medical care providers from large RAS empanelled corporative hospitals are visiting the households of RAS card holders picking up surgical cases that are covered in the RAS packages. The incidence of hysterectomy (removal of uterus) increased by 154%. The incidence of all the surgeries for those included in RAS increased.

5. Hospital analysis showed a 30% jump of RAS covered surgeries in government hospital and 250% jump of RAS covered surgeries in the private corporate hospital that is included in the study.

6. The detailed analysis of appendicectomy showed that the government hospital included in the study performed the surgery in the 32% of non cases, while the private hospital included in the study performed the surgery in 92% of non cases. Can we explain this as rational economic behaviour or moral turpitude?.

Summary of Conclusions:

1. Conclusion from the first part of the study is admissions increased after the Social Medical Insurance is introduced in Andhra Pradesh. The Government Health Facilities admitted 8% more Lower Status patients following Insurance, while Private Health Facilities admitted 540% more Lower Status patients, showing excess Delivery of Medical Services especially by the Private Health Care Providers. In the recent years, (2010), there is reduction in Health Care Utilization from Government Health Care Providers by the Lower Status Population. The Temporary Family Planning Needs showed a reduction of 47%(-47%), Terminal Family Planning Needs showed a reduction of 98%(-98%), Antenatal Care showed a reduction of 32%(-32%), The Intrapartum Care showed a reduction of 72%(-72%), The Immunization Care showed a reduction of 86%(-86%), The Health Care Utilization for Diarrhoeal Diseases and other infectious Diseases in case of Emergencies showed a reduction of 43%(-43), The Health Care Utilization in respect to Detection and/or follow up of Chronic Diseases like Diabetes and/or Hypertension showed a reduction of 69%(-69%) and the Health Visiting of Households by Government Health Providers showed a reduction of 388%(-388%). The above data clearly showed that the Government is not giving priority to the Health Care Delivery by the Government Health Care Providers.

2. Medical Care Delivery increased following Medical Insurance. Our survey concluded sharp increase incidence of Hysterectomy, Post Insurance. Upper Status Households many of them

who don't have Insurance Cards showed a increased Hysterectomy incidence (Removal of Female Reproductive Organ = Uterus) of 38%, Middle Status Households (some of them have Insurance Cards) showed a increased Incidence of 63% and Lower Status Households (almost every Household with Insurance Cards) showed a increased Incidence of 154%. Early hysterectomy can harm women's health. Most women reach menopause between the ages of 45-55, with the average age around 50. Early menopause occurs after surgery since blood supply to the ovaries gets reduced after removal of the uterus. Estrogen is the hormone that helps prevent calcium loss and bone breakdown in women. So there could be a loss up to 15-25% of bone mass, leading to mild to moderate or severe osteoporosis. Thus, Medical Insurance is leading to excessive Delivery of Medical Care there by responsible for reduced Health Status and Morbidity.

3. Our survey found Excess Delivery of Medical Care in the form of increased incidence of Appendicectomy and in the form of increased incidence in Surgery for Incisional (Ventral) Hernia.

4. Conclusion from the second part of the study is surgeries covered by Insurance showed a jump of 257%, while the surgeries not covered by Insurance showed a decline of -16% in the Government Hospital. The surgeries covered by Insurance showed a jump of 779% in Private Corporate Hospital. *It is clear that Insurance appears to encourage people to seek more Care from the expensive Private Corporate Hospital compared to the Government Hospital. There seems to be tilting the funds to the already flourishing Private Sector.*

5. Conclusion from the third part of the study is Post Insurance Appendectomy surgery was performed in 92% of non-cases by the Private Corporate Hospital. This is a best example of how the Tax Payers money is being diverted to Private Corporate Hospital via Social Medical

Insurance. *If stringent regulatory structures and an effective implementation mechanism are put in place, the deleterious effect of Voluntary Private Health Insurance could be ameliorated to some extent. There is tendency to over utilize and over prescribe Medical Care. Both demand-side and supply-side Moral Hazards generated by the Insurance Scheme.*

Chapter 7: Recommendations

Option 1

Reduction of package amount (*If the RAS still chooses to purchase privately provided tertiary care*)**:**

The RAS package amount should be 20% to 30% over the cost price, not 100% to 300% over the cost price. Example : The package for hysterectomy in CGHS and ESIS is Rs. 13,000, Yeshasvini is Rs.6000, RSBY Rs.10,000 and in RAS Rs.35,000(RAS in the year 2009 reduced the package to Rs.30,000 and again in the year 2010 to Rs.20,000).

Option 2

Stringent regulation (*If the RAS still chooses to purchase privately provided tertiary care*)**:**

To avoid malpractices, corruption and fraud stringent regulation is required. RAS roughly a well over Rs.1,200 crores and most of the money going to surgery packages. Our study of appendicectomy analysis showed that the government hospital included in the study performed the surgery in the 32% of non cases, while the private hospital included in the study performed the surgery in 92% of non cases. Surgery for non cases should be avoided. After surgery the specimens/ organs removed should be sent to the trust's own pathology laboratory for diagnosis. Cross checking of the pathology reports is suggested. *By spending a few lakhs of rupees on pathology laboratories, hundreds of crores from false claims will be saved.*

Options 3

Modify RAS:

Health status may reduce if disproportionately high budgets are allotted to tertiary care (Figure 5). In Andhra Pradesh well over half of all government expenditure is an tertiary care(Figure 4), resulting in reduced health status(Table 4, Appendices 10). The government can not spent any longer on the raising claims ratios in RAS. Recently the government of Andhra Pradesh Aarogya Sri health care trust vide circular number AST/560/F43/2011-2012, dated 26.07.2011, removed 133 procedures from the preview of private hospitals stating minimizing moral hazard has one of the reasons, and reserved them to be performed by government hospitals alone (Appendices 11). We are of the opinion that in future these 133 RAS procedures which are reserved to be performed in the government hospitals will also be removed in the future and the once ambitious RAS partial medical insurance scheme will be history.

Health status will improve if more budget is allotted to preventive care and primary care (Figure 5). The future modified insurance should be true health insurance and not partial medical insurance. The scheme should cover the cost decreasing High technology, minimizing the spending on cost increasing Half way technology that is been provided by the tertiary medical centres. At least a minimal amount of cost sharing is required as in the case of RSBY. The new health scheme, with stringent regulation, without increasing moral hazard will definitely improve the health status.

Summary of Recommendations

1. *Reduce Package Amount* The package amount should be 20% - 30% over the cost price and not 100% - 300% for example: The package for Hysterectomy in CGHS and ESIS is Rs. 13,000,

Yeshasvini is Rs.6,000/-, RSBY Rs.10,000/-, but in RAS(Andhra Pradesh) Rs.35,000. By reducing the Package Amount Moral Hazard can be reduced. 2. *Stringent Regulation* A robust regulatory system for quality and price control, supported by periodic technical and social audits, would be needed to ensure that the imperfect market mechanisms of Private Health Care Provision do not lead to inappropriate or unduly expensive care, if the Government chooses to purchase Privately provided Tertiary Care. 3. *Modify the present Medical Insurance in Andhra Pradesh* It is seen that the Medical Insurance in the State is not improving the Health Status. It is leading to excess Delivery of Medical Care, which is costly, by the Private Tertiary Care Hospitals and Primary Health Care Utilization provided by the Government Health Care Providers which is cost effective is reduced. The future modified Health Insurance should cover the Primary Care and the Secondary Care to improve the overall Health Status of the Population of Andhra Pradesh.

Chapter 8: Specific Contribution

SPECIFIC CONTRIBUTION:

1. Surveys: Since that two surveys, one in 2007 and another in 2010 post medical insurance, on the same population, some interesting findings were recorded. In the second survey a significant drop in public health care utilization by all the social groups was noticed, while utilization of private tertiary medical care increased many fold. Surgeries like hysterectomy, appendicectomy and incisional hernia repair all covered by medical insurance increased several fold especially in private hospital.

2. Hospital Analysis: Surgery patterns in a government hospital and in a private hospital showed a marked increase of 30% and 250% in the number of surgeries covered by medical insurance scheme.

3. Appendicectomy Analysis: Analysis of surgery for appendicitis showed that, post insurance, surgeons in government general hospital performed the operation in 32% of non cases(patients with other complains) and surgeons in private corporative hospital performed the operation in 92% of non case.

4. Conclusion: It is concluded that the RAS is not sustainable in the future and various options are recommended for the sustainability of social health insurance. *Option 1:*Reduction of package amounts, since most of the packages are 100% t0 200% over the cost price of treatment. *Option 2:* Stringent Regulation to avoid malpractices and fraud. A method to prevent supply side moral hazard is recommended. *Option 3:* Modify RAS The future modified insurance should be true health insurance and not partial medical insurance. The scheme should cover the cost decreasing High technology like preventive care and primary care and should minimize the spending on cost increasing Half way technology that is been provided by the tertiary medical centres.

Chapter 9: Future Scope of work

FUTUTRE SCOPE OF WORK:

1. *Experiments on moral hazard following medical insurance.* In the earlier study it is concluded that the moral hazard for the insured surgical packages can be controlled or in fact be prevented by establishing properly controlled central pathology laboratories were surgically removed specimens can be subjected to stringent re-verification of the diagnosis. By spending a few lakhs of rupees by establishing pathology laboratories, crores of rupees can be saved if claims are stopped to false cases and unnecessary surgeries.

Future study and experiments are required to find out the answer to the next big question. How to avoid false claims and unnecessary treatments of medical diseases included in insurance packages?

2. *Study of efficiency of various health insurance schemes.* ESIS and CGHS cover Outpatient , preventive , maternity and inpatient care. RSBY does not cover outpatient and preventive, but covers maternity and inpatient care. More studies comparing the efficiency of various health schemes are required.

3. *Ideal health insurance scheme.* The scheme should cover the high technology like preventive care and primary health care and should minimise the spending on cost increasing Half way technology available at tertiary medical health centres. One of the options is integrating the three central government health schemes -CGHS, ESIS, and RSBY. Presently CGHS covers mainly the tertiary care, RSBY mainly the secondary care and ESIS all the three levels of care. It makes eminent sense to integrate all the three schemes under one umbrella. Presently ESIS has large network of hospitals and dispensaries, but underutilized. So an integrated model could be helpful and future studies are required.

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Appendices

ENT SURGERY AAROGYASRI-II

S.NO	CODE	SYSTEM	SPECIAL INVESTIGATION (ONLINE)	PACKAGES	POST OPERATIVE/ PROCEDURE INVESTIGATION
	S3.7	PEDIATRIC OPHTHALMIC SURGERY			
121	S3.3.6	Photocoagulation for Retinopathy of prematurity	Photo of the Child	7500	Clinical photograph showing procedure
122	S3.3.7	Paediatric Catract Surgery (Phacoemulsification+IOL)	A & B Scan, Clinical Photo	15000	Clinical Photograph
123	S3.3.8	Glaucoma filtering Surgery for Paediatric Glaucoma	Clinical Photograph	15000	Clinical Photograph

GYNAECOLOGY AND OBSTETRICS SURGERY AAROGYASRI-II

S.NO	CODE	SYSTEM	SPECIAL INVESTIGATION (ONLINE)	PACKAGES	POST OPERATIVE/ PROCEDURE INVESTIGATION
	S4.1	OBSTETRICS			
124	S4.1.1	Caesarean Hysterectomy with Bladder Repair	USG	30,000	Postop USG/Photograph
125	S4.1.2	Rupture Uterus with Tubectomy	USG	25,000	USG
126	S4.1.3	Eclampsia with Complications requiring ventilatory support	ABG,CUE,LFT,RFT, Heamatocrit,Platelet Count, S.Fibrinogen Level,PT,APTT	20000	Biochemical Investigations, Clinical Photograph
127	S4.1.4	Abruptio-placenta with Coagulation Defects(DIC)	USG,Heamatocrit,Platelet Count, S.Fibrinogen Level,PT,APTT	20000	USG,Clinical Photograph of Retroplacental clots
	S4.2	GYNAECOLOGY			
128	S4.2.1	LAVH	USG	30,000	Post-op USG & Biopsy,WebEx Recording
129	S4.2.2	Laparoscopic Cystectomy	USG	20,000	Post-op USG & Biopsy,WebEx Recording
130	S4.2.3	Laparoscopic Ectopic Resection	USG	20,000	Post-op USG & Biopsy,WebEx Recording
131	S4.2.4	Laparoscopic ovarian drilling	USG	15,000	Post-op USG & Biopsy,WebEx Recording
132	S4.2.5	Laparoscopic Myomectomy	USG	25,000	Post-op USG & Biopsy,WebEx Recording
133	S4.2.6	Laparoscopic recanalisation	USG	20,000	Post-op USG & Biopsy,WebEx Recording
134	S4.2.7	Laparoscopic Sling operations	USG	25,000	Post-op USG & Biopsy,WebEx Recording
135	S4.2.8	Laparoscopic adhesolysis	USG	25,000	Post-op USG & Biopsy,WebEx Recording
136	S4.2.9	Vaginal Hysterectomy	Scan	20,000	Post-op USG & Biopsy
137	S4.2.10	Vaginal Hysterectomy with pelvic floor repair	Scan	30,000	Post-op USG & Biopsy
138	S4.2.11	Vaginal Hysterectomy with Mesh repair	USG	40,000	Post-op USG & Biopsy
139	S4.2.12	Cystocele ,Rectocele & Perineorraphy	USG	20,000	Post-op USG & Biopsy
140	S4.2.13	Pelvic floor Reconstruction with mesh	USG	30,000	Post-op USG & Biopsy
141	S4.2.14	Mc Indo's repair for Vaginal Atresia	Scan, Clinical Photograph	30,000	Post-op USG & Biopsy
142	S4.2.15	Slings with mesh repair for prolapse	USG	40,000	USG
143	S4.2.16	Vault prolapse abdominal repair	USG,Clinical Photograph	30,000	USG
144	S4.2.17	Vault prolapse abdominal repair with mesh	USG ,Clinical Photograph	40,000	USG

APPENDICES 1

GENERAL SURGERY AAROGYASRI-II

S.NO	CODE	SYSTEM	SPECIAL INVESTIGATION (ONLINE)	PACKAGES	POST OPERATIVE/ PROCEDURE INVESTIGATION
35	S1.3.1.9	Ventral and Scar Hernia with mesh	Clinical Photograph, USG	30000	Clinical Photograph
	S1.3.2	**APPENDIX**			
36	S1.3.2.1	Lap. Appendicectomy	USG	22000	Clinical Photo,Biopsy,WebEx Recording
37	S1.3.2.2	Appendicular Perforation	USG	20000	Clinical Photograph/Biopsy
	S1.3.3	**STOMACH, DUODENUM AND JEJUNUM**			
38	S1.3.3.1	Highly Selective Vagotomy	Endoscopy	25000	Clinical Photograph
39	S1.3.3.2	Selective Vagotomy Drainage	Endoscopy	40000	Clinical Photograph
40	S1.3.3.3	Vagotomy Pyloroplasty	Endoscopy	40000	Clinical Photograph
41	S1.3.3.4	Gastrojejunostomy & Vagotomy	Endoscopy-Video Photo	40000	Clinical Photograph
42	S1.3.3.5	Operation for bleeding pepticulcer	Endoscopy	40000	Clinical Photograph
43	S1.3.3.6	Partial/subtotal Gastrectomy for ulcer	Endoscopy	40000	Clinical Photograph
44	S1.3.3.7	Pyloromyotomy	Endoscopy	20000	Clinical Photograph
45	S1.3.3.8	Gastrostomy	USG/Endoscopy/CT /Biopsy	20000	Clinical Photograph
46	S1.3.3.9	Gastrostomy Closure	Clinical photograph	20000	Clinical Photograph
47	S1.3.3.10	Duodenal perforation	X-Ray Erect/USG /CT Abdomen	40000	Clinical Photograph
	S1.3.4	**SMALL INTESTINE**			
48	S1.3.4.1	Intususception	USG/Endoscopy/Abd.X-ray	40000	Clinical Photograph/Biopsy
49	S1.3.4.2	Operation for Acute intestinal obstrucion	Abd.X-ray, USG/Endoscopy/ Biopsy	40000	Clinical Photograph/Biopsy
50	S1.3.4.3	Operation for Acute intestinal perforation	USG, Abd.X-ray, CXR	40000	Clinical Photograph/Biopsy
51	S1.3.4.4	Operation for Haemorrhage of the small Intestine	Endoscopy/CT with Contrast	40000	Clinical Photograph/Biopsy
52	S1.3.4.5	Operations for Recurrent intestinal obstruction (Noble plication other)	CT with Contrast	40000	Clinical Photograph,Biopsy
53	S1.3.4.6	Resection & Anastomosis of small intestine	CT/Abd.X-ray	35000	Clinical Photograph/Biopsy
54	S1.3.4.7	Ileostomy	USG/Endoscopy/Biopsy	20000	Clinical Photograph
55	S1.3.4.8	Ileostomy Closure	Clinical Photograph	20000	Clinical Photograph
	S1.3.5	**LARGE INTESTINE**			
56	S1.3.5.1	Mal-rotation & Volvulus of the midgut	X-ray ABD/ CT	40000	X-Ray/ Clinical Photograph
57	S1.3.5.2	Operation for Volvulus of large bowel	X-Ray Abdomen/CT Contrast	40000	X-Ray ABD, Clinical Photograph
58	S1.3.5.3	Operation of the Duplication of the intestines	CT Contrast	40000	Clinical Photograph
59	S1.3.5.4	Left Hemi- Colectomy	USG/Barium/Endoscopy/ CT	30000	Clinical Photograph/Biopsy
60	S1.3.5.5	Right Hemi colectomy	USG/Barium/Endoscopy/ CT	30000	Clinical Photograph/Biopsy
61	S1.3.5.6	Total Colectomy	USG/Barium/Endoscopy/ CT	40000	Clinical Photograph/Biopsy
62	S1.3.5.7	Colostomy	USG/Barium/Endoscopy/ CT	20000	Clinical Photograph
63	S1.3.5.8	Colostomy Closure	Clinical Photograph	20000	Clinical Photograph
	S1.3.6	**RECTUM AND ANUS**			
64	S1.3.6.1	Pull through abdominal resection	Clinical Photograph	30000	Clinical Photograph
65	S1.3.6.2	Anterior Resection	Colonoscopy/ Clinical Photograph/Biopsy	50000	Clinical Photograph/Biopsy
	S1.4	**LIVER**			
66	S1.4.1	Operation for Hydatid cyst of liver	USG /CT / ELISA	30000	USG

MARCH 14, 2010 | PAGES 34 | INCLUDING *HYDERABAD TIMES, TIMESLIFE! (FOR METRO ONLY) & CLASSIFIEDS

Scrap YSR's schemes: Plan panel

'Arogyasri Only Helping Pvt Hospitals; Power Subsidy To Industries Ridiculous'

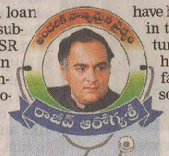
Jinka Nagaraju | TNN

Hyderabad: In a major blow to the state government, the Planning Commission has given the thumbs down to practically every scheme launched by late chief minister Y S Rajasekhara Reddy during the last five years and more or less directed his successor K Rosaiah to do away with populist schemes and concentrate on providing quality development.

At a meeting held here on Friday to finalise the state's annual plan 2010-11, Planning Commission member Abhijit Sen wondered how a state's 30 per cent of the population was poor and yet it recorded the highest growth in the country. While Sen led the planning panel team, the state was represented by chief secretary S V Prasad and at least 22 principal secretaries and secretaries of various departments.

According to sources, every scheme from free power to farmers, power subsidy to industries, Arogyasri, pensions, loan waivers, pavala vaddi and input subsidies implemented by the YSR regime between 2004-09 came in for criticism from the central panel. "All these schemes may be politically popular, but at what cost? Are you not destroying the system by distributing everything free," Sen asked the state government officials and directed them to amend the schemes in such a manner that the beneficiaries pay for the services provided rather than enjoy them free.

The chief secretary's attempts to justify the subsidy schemes reportedly failed to cut any ice with the panel. Debunking the contention of the state that it has achieved high agricultural production despite providing subsidies, Sen said: "You have had good rains and bumper crops in the last four years. The agriculture growth rate is shown as very high. In such a situation, why do farmers need subsidies and why sops like loan waivers, pavala vaddi scheme, free power and input subsidies. Such subsidies become necessary only when there is drought and crop failure. When everything is ok, such a huge unproductive expenditure is uncalled for."



"Are you not destroying the system by distributing everything free"

Abhijit Sen
PLANNING COMMISSION MEMBER

A senior advisor from the Planning Commission reportedly observed that the free power to farmers was actually being grossly abused besides causing reckless wastage of ground water. Apart from suggesting that the free power be metered and the farmer be made to pay for it, the panel told the state to do away with the power subsidy being extended to industries. "The industrial power tariff in Andhra Pradesh is very low. Therefore, there is no reason to give them any more incentives," the plan panel said.

Castigating the state on the manner in which money was being spent on the Arogyasri scheme, Sen said: "The state spends 66 per cent of its health care budget or Rs 800 crore every year on Arogyasri. You have brought under it every disease and ailment from common cough to heart attack. And almost all the cases are being treated in corporate hospitals. Through this scheme, you are indirectly fattening the corporate hospitals and killing the state health system," is how Sen summed up YSR's pet scheme.

In a sort of belated relief for the state, the Planning Commission towards the end of the meeting patted the state for the performance in areas like rural development and social welfare.

Hyderabad • Saturday • 28 August 2010

Hospitals rake in ₹10 cr through uterus surgeries

DC CORRESPONDENT

WARANGAL

Aug. 27: In the last two years in Warangal as many as 3,346 hysterectomy operations were performed under Arogyasri. Hospitals charged ₹30,000 per hysterectomy and have become richer by ₹10 crore.

Hysterectomy operations alone account for 10 per cent of the ₹102 crore released by the Rajiv Arogyasri Health Care Trust to 18 hospitals in Warangal for operations performed from August 2008 to August 2010.

In all, 12 hospitals of the 18 Arogyasri-recognised hospitals, including three government ones, were authorised to perform hysterectomies.

Hysterectomy operations were carried out by private hospitals in collusion with private diagnostic centres, which are suspected to have given fake biopsy reports, said sources. As of now, private diagnostic centres do not come under RAHCT's purview. After complaints of misuse of hysterectomy operations by private Arogyasri-recognised hospitals, RAHCT issued guidelines to all its network hospitals in the state on May 14, 2009, and cut the reimbursement amount from ₹30,000 to ₹20,000.

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APPENDICES 4

HYDERABAD • WEDNESDAY • 1 SEPTEMBER 2010

CUT-THROAT MEDICARE

Private hospitals thrive on needless surgery

SULOGNA MEHTA
DC | HYDERABAD

Aug. 31: There's a marked difference in the number of surgical procedures carried out in government and corporate hospitals in the city for simple cases like appendicitis, tonsillitis, ovarian cysts and pregnancy.

Statistics collected from government and private hospitals show that far more such surgeries are carried out in private hospitals, which raises the question whether these operations are really required or are needlessly forced on patients in private healthcare centres because they cost more. For instance, while 60 out of every 100 pregnant women admitted in private hospitals deliver babies through Caesarean section, in government hospitials only 20 out of 100 women require surgical intervention for child delivery. In the case of hysterectomy, just 3.5 per cent of women admitted with gynaecological problems in government hospitals undergo the surgery while 30-40 per cent do so in private hospitals.

The superintendent of Osmania General Hospital, Dr Sampath Kumar, said out of every 100 patients admitted with abdominal pain, only three or four patients actually require an appendicitis operation. However, data shows that around 50 per cent of such patients are operated upon in private hospitals.

Page 5: 60% C-sections in private hospitals

hospital hazard **A lot of surgeries are forced on patients in private hospitals as they cost more.**

Type of surgery	private hospitals (for every 100 patients)	state hospitals
Hysterectomy	30 to 40 operations	4 to 5 operations
Tonsillectomy	40	20
Caesarean	60	20
Appendectomy	50	3 to 4

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APPENDICES 5

MAN & CO. LTD. | ESTABLISHED 1838 | HYDERABAD | THURSDAY, FEBRUARY 10, 2011 PAGES 32 | PRICE ₹ 1.50; ₹ 4.00* WITH ECONOMIC TIMES

HE TIMES OF INDI

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GILANI DISSOLVES HIS CABINET 17

TEAM INDIA BEGIN TRAINING FOR WORLD CUP AT BANGALORE 19

Arogyasri patients turn guinea pigs

Hospitals Try New Drugs On Illiterate Patients

Roli Srivastava & Bushra Baseerat | TNN

Hyderabad: The poor literacy level of Arogyasri beneficiaries has given a lucrative but worrisome spin to healthcare business in the state— city hospitals are now hard-selling their patient numbers to bag clinical trial projects from international pharma firms. Whether big or small, public or private, most hospitals in the state now have a dedicated clinical research unit to carry out trials. Doctors note there is a surge in the number of companies headed to the state and also the number of trials being carried out, "because there are a lot of guinea pigs here".

Being tested on people are drugs for diabetes, cancer apart from drugs for cardiac, gastro and liver conditions. Certain drugs for hormonal problems as well as rheumatic disorders are also being tested currently in city hospitals. The trials are on even in district hospitals, both private and public and doctors involved in clinical trials agree that most of their volunteers are 'uneducated and poor'. There is reliable information on poor patients even being 'supplied' to hospitals under Arogyasri for the trials. "Getting a signature on the consent form is not difficult. If it takes a year to get 10 patients to volunteer for a trial in the US, here the same number can be arranged in no time," said a researcher.

Dr M Prakasamma of Academy of Nursing Studies who has been a member of various ethical committees on medical research in the past says there are huge concerns on patient awareness on what is being tried on them. And that the clinical trial business is big is evident from the fact that now institutes for training manpower to carry out trials have sprung up to meet the growing demand for personnel in these research units.

SICKENING PRACTICE

Doctors say there is a surge in the number of companies headed to the state and also the number of trials being carried out, "because there are a lot of guinea pigs here"

Industry sources note that most clinical trials are taking place in government hospitals, because "recruiting volunteers" is easy. However, private hospitals over the last couple of years have emerged as competitors with the state health insurance scheme giving them the much-needed numbers to bag trials. "If earlier we could recruit one patient from 10, we now have larger base and can recruit 10 from 100," said a senior industry source dabbling in clinical trials.

Predictably, trials have turned into a concrete revenue generation model for hospitals with some estimates indicating that trials account for 3 per cent of the hospital's total revenue. "The sector is bullish currently and we expect the revenue to multiply manifold over the next couple of years," an industry player said. Hospitals make anywhere between a couple of lakhs to a few crores for each trial, the revenue dependent on the nature of the trial, the drug being tried and the number of patients recruited for the trial.

Hospitals are mostly being offered packages by pharma companies, which includes the hospital charges as well as the doctor's fee. "Many doctors are now interested in these trials because they make a neat sum over and above their salaries," says a hospital administrator, adding that the trials are coming in handy for hospitals to lure doctors with jobs offering fat salaries and perks such as opportunity to travel abroad on the pharma firm's expense to participate in discussions/conferences on the trials. "At least 60 doctors from government hospitals alone have gone abroad in the last one year alone," said a senior official attached to a government hospital.

So last month, when hospital major Apollo tied up with global clinical trial provider Quintiles to set up a research unit at its Jubilee Hills facility, industry players said the announcement was only a formal acknowledgment of an arrangement that many city hospitals already have. While Apollo publicly announced its 86-bed unit to carry out 'simple studies on healthy volunteers', other hospitals such as the Nizam's Institute of Medical Sciences (Nims) have over 100 trials going on at any given time.

THE TIMES OF INDIA, HYDERABAD
SATURDAY, JULY 16, 2011

132 ailments under Arogyasri to be treated only at govt hospitals

About 50 of 340 Arogyasri Empanelled Hospitals Now Face Closure

Bushra Baseerat\tnn | TNN

Hyderabad: In a radical move, the state government has decided to reserve 132-odd routinely performed procedures under Arogyasri scheme for public sector hospitals and thus ensuring that the number of cases going to private hospitals drop significantly. To be implemented in a month or two, the landmark decision has come as a blow to the 340 Arogyasri empanelled hospitals in the state which will not be allowed to take up treatment of these 132 ailments. At least 50 of them are worried of an imminent closure. Most of these are B-grade 50-bedded hospitals, that sprung up in the city over the last three years to live off the Arogyasri scheme.

With the government now battling to fund this health insurance scheme, hospital managements say they would be forced to shut down if the flow of Arogyasri funds stop, clearly indicating that they don't really have patients other than Arogyasri cases. There are an estimated 50 such hospitals in the twin cities alone. Hospital administrators admit that a neat 40-80% of their business is Arogyasri funds-dependent. Most of the hospitals have come up on the city outskirts and some in the core city area over the last three years.

CASH-STRAPPED GOVT

"This flagship scheme of the state government was launched to provide quality health care to the poor. After four years, they have now redesigned it in such a way that the original idea of the scheme has been totally diluted. These patients cannot get corporate care in government hospitals," said a senior doctor heading an Arogyasri empanelled hospital in the city. He added that after encouraging the poor to go to corporate hospitals for four years and now forcing them back to government hospitals, the government is fooling them.

Opposing this move, experts note that it's the poor patients who will suffer ultimately. "There is a threat of a huge waiting list at government hospitals due to this as the bed strength in these hospitals is poor. So patients would have to go to private hospitals and shell out money despite being covered under the scheme," said Dr B Bhaskar Rao, president, AP Speciality Hospitals Association. He added that if the government implements this measure, many smaller hospitals may have to close down.

However, Arogyasri Trust CEO N Srikant told TOI that the procedures that would be reserved for government hospitals were identified by a committee for better administration and strengthening of government hospitals. "These identified procedures are those where there is scope for misuse or moral hazard. If entrusted to government hospitals, the misuse will not occur," said Srikant adding that procedures including hysterectomy and appendicitis would now be reserved for government hospitals. Senior doctors at government hospitals lauding the move said that this would increase the revenue of the state run facilities. Ever since the scheme was launched, a majority of the patients have been going to private hospitals. Public hospitals see a 10 % jump in their revenue with this move.

"Had the government spent the same money on government hospitals, the quality and benefits for patients would have been 10 times better," said R S Saluja, president-elect, AP Nursing Homes Association.

Now, the AP Speciality Hospitals Association is representing the government to increase the package rates by 20-25 %. "These rates were fixed some four years back. Now due to inflation, change in salary structure, power bill and cost of disposables have all gone up," said Dr Bhaskar Rao, president of the association. He added that Rs 1,000 crore is not a big amount for the government to spend on health when it is spending Rs 4,000 crore on education.

▶Related reports: P17 : nome. TNN TOI SEP 23, 2011

Poor outnumber AP's population

Kingshuk Nag | TNN

Hyderabad: In Kiran Kumar Reddy's land, there are more poor people than the total population! On Wednesday, the chief minister announced his Dasara gift for the poor: rice at Re 1 per kg for 2.26 crore below the poverty line (BPL) families. Given that an average family size is of 4 persons, this translates into a total population of 9.04 crore. But the Census of India in its preliminary finding pegs the present population of Andhra Pradesh at 8.46 crore.

The sleight of hand is deliberate: the move is not to empower the poor but to keep happy the vote bank and others who can support at a time when the government is under siege. Experts expect a significant part of this subsidised rice to leak out. "It will go into the hands of black marketeers who will make huge profits given that the price of rice in the open market is not less than Rs 20 a kilo," analysts said. "Perhaps some of them will be ruling party goons who can come in handy at the time of the next elections," averred these analysts.


Kiran Kumar

The operation will require 3.3 lakh tons of rice every month. The subsidised rice move will cost the exchequer an additional Rs 600 crore. The government is already spending Rs 2,000 crore to supply rice at Rs 2 a kilo. This scheme was started by Y S Rajasekhara Reddy during his tenure and contributed towards his winning a second term in 2009. "The fresh move means that the public has to bear a burden of Rs 2,600 crore to keep Kiran in his gaddi," the analysts said.

The chief minister has already made provision for this money by taxing the public. GO1718 issued on September 13 raised the VAT on 3,000 goods of common use that includes salt, match box, coffee, coconut oil, tea products, flour, jaggery, drugs, medicines and silk fabric among a host of others. The VAT was increased from 4% to 5% and this will bring Rs 1,600 crore into the government's kitty in a full year.

Technically, however, the increase in VAT need not be translated into a price increase. But in this case it will, because the goods are in the nature of essentials and therefore their demand is – to use the parlance of economists – inelastic. In such cases, the seller will pass on the burden of the extra taxes on to the consumer.

"This is a conspiracy to loot the public to shower the vote bank with goodies. In some case the people looted are the poor themselves: after all they also buy salt, match boxes and coconut oil," said Sunil Rao, an executive in a private firm. "Neither does any political party complain because all of them are in this game of fooling the public. There being no civil society worth the name in the state everybody takes it lying down," he added.

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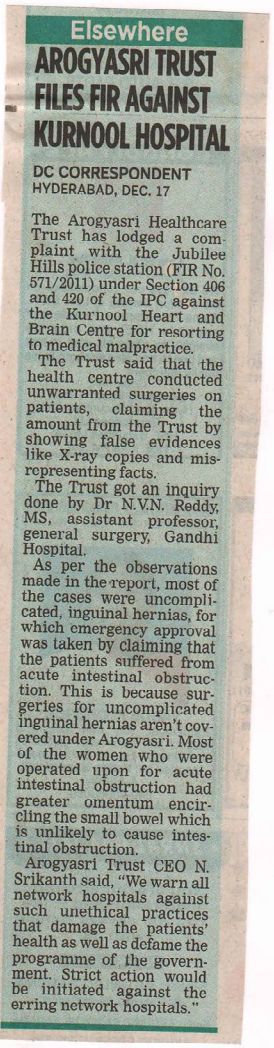
APPENDICES 8



Elsewhere

AROGYASRI TRUST FILES FIR AGAINST KURNOOL HOSPITAL

DC CORRESPONDENT
HYDERABAD, DEC. 17

The Arogyasri Healthcare Trust has lodged a complaint with the Jubilee Hills police station (FIR No. 571/2011) under Section 406 and 420 of the IPC against the Kurnool Heart and Brain Centre for resorting to medical malpractice.

The Trust said that the health centre conducted unwarranted surgeries on patients, claiming the amount from the Trust by showing false evidences like X-ray copies and misrepresenting facts.

The Trust got an inquiry done by Dr N.V.N. Reddy, MS, assistant professor, general surgery, Gandhi Hospital.

As per the observations made in the report, most of the cases were uncomplicated, inguinal hernias, for which emergency approval was taken by claiming that the patients suffered from acute intestinal obstruction. This is because surgeries for uncomplicated inguinal hernias aren't covered under Arogyasri. Most of the women who were operated upon for acute intestinal obstruction had greater omentum encircling the small bowel which is unlikely to cause intestinal obstruction.

Arogyasri Trust CEO N. Srikanth said, "We warn all network hospitals against such unethical practices that damage the patients' health as well as defame the programme of the government. Strict action would be initiated against the erring network hospitals."

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APPENDICES 9

THE TIMES OF INDIA, HYDERABAD
FRIDAY, DECEMBER 30, 2011

Infant mortality still high in AP

Bushra Baseerat | TNN

Hyderabad: Andhra Pradesh continues to hold the dubious distinction of having the highest Infant Mortality Rate (IMR) in south India as per the latest Sample Registration System (SRS) survey statistics for 2010.

Although there has been a marginal drop as compared to last year still, as many as 46 infants die in the state for every 1,000 live births, according to the government of India survey, the findings of which were made public on Tuesday. In fact, Andhra Pradesh figures among the top 10 states in the country with high IMR.

IMR indicates the number of infants below one year dying per 1,000 live births. Karnataka has an IMR of 38 while Tamil Nadu has an impressive IMR of 24. Kerala beats the four southern states with its healthy IMR of 13. As per the SRS survey, Madhya Pradesh figures at the top with an IMR of 62 followed by Orissa and UP with IMRs of 61. These three are followed by Assam, Rajasthan, Meghalaya, Haryana, Bihar and Andhra Pradesh. "The IMR is always linked to the literacy rate among women. If you consider the rest of south India, the literacy rate is high as compared to Andhra Pradesh," says Dr T Neerada, joint director, immunisation and child health.

However, as per latest data, the state's IMR has actually marginally down from 49 in 2009 to 46 in 2010. The national IMR is now 47 as against the previous year's 50. Although state health authorities are hailing the marginal drop as an achievement, attributing it to improved vaccination coverage, child healthcare facilities and awareness, experts beg to differ.

"The small drop is not a reason to celebrate. AP's figure is much higher than Kerala's. There are percentage errors because people keep migrating. Hence, it is difficult to get the real picture," says Veena Shatrugna, former deputy director, National Institute of Nutrition.

A senior pediatrician at a state-run hospital says that poor neo-natal care facilities, overcrowding at government hospitals and lack of infrastructure are factors contributing to high infant mortality. "The state government has to ensure that hospitals follow up on high-risk babies till they reach the age of one year," the doctor said.

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APPENDICES 10

Aarogyasri Health Care Trust

Government of Andhra Pradesh

Dr.Y.S.R.Bhavan, Opp. Dr.B.R.Ambedkar Open University,
Road No. 46, Jubilee Hills, Hyderabad 500 033

CIRCULAR

AST/560 / F43 / 2011-12, dated 26.07.2011

Sub: Aarogyasri Health Scheme – Reservation of certain procedures to Govt. Hospitals in the districts of Phase-IV & Phase-V – Proposed action plan – Reg.

----0----

The Phase-IV and Phase-V of Rajiv Aarogyasri Health Insurance scheme for 192 identified procedures is renewed from 16.07.2011 to 16.07.2012 (Phase-IV & Phase-V, 3rd Renewal) in 10 districts of Adilabad, Hyderabad, Kurnool, Vizianagaram, Vishakapatnam, Nizamabad, Khammam, Warangal, Guntur and Krishna. The remaining 750 procedures are being implemented through Trust administered scheme in the above 10 districts. 141 Corporate / Private Hospitals and 45 Government Hospitals are empanelled in these districts under the scheme.

As directed by the Govt. Trust further processed 133 procedures for which infrastructure and speciality services available at the District Hospitals level. In order to make clinical material available for teaching purpose, minimize moral hazards inherent to such procedures and enhance the performance of Government Hospitals, it is decided to reserve 133 procedures to be performed in Govt. Hospitals. Trust accordingly initiated steps to implement the scheme in these 10 districts. The necessary changes in online workflow are also being done.

Hence, it may be noted that from 01.08.2011, the identified 133 procedures (list enclosed) will be reserved to the Govt. Network Hospitals in these districts. The beneficiaries belonging to these 10 districts shall be referred to nearest Govt. Hospital capable of performing these procedures. The patient facilitation services such as Call Centre, Field Operations Team are also sensitized in this matter to guide the patients accordingly.

In view of the above, all the District Collectors and Superintendents of Govt. Network Hospitals of these 10 districts are requested to ensure that the hospitals are geared up to perform these identified 133 procedures at their hospitals from 01.08.2011 and accept the increase in load of these patients if any.

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APPENDICES 11

GOVERNMENT OF ANDHRA PRADESH

ABSTRACT

HM&FW Department – Aarogyasri Health Care Insurance Scheme – Norms for billing and Guidelines for utilization of amounts received by the Government Hospitals under Aarogyasri Scheme – Amendment – Orders – Issued.

HEALTH, MEDICAL AND FAMILY WELFARE (M1) DEPARTMENT

G.O.Rt.No. 1344 Dated: 06-10-2010.

Read: -

G.O.Rt.No.134 HM&FW (K2) Department, dated: 1-2-2010.

<<0>>

ORDER: -

In the G.O., read above, Government have issued certain Norms for billing and Guidelines for Utilization of amounts received by the Government Hospitals under Aarogyasri Scheme.

2. Government after careful examination of the matter hereby issue the following amendment to Items (ii),(iii),(iv) and (v) of Point C of the G.O. read above: -

Present Guidelines	Amendment
(ii) The 35% incentive amount shall be apportioned among the Surgical/Medical, Investigative, Nursing and Class-IV Staff as per the following ratio: Surgical/Medical Team .. 75% Investigative Team .. 10% Nursing Staff .. 10% Class-IV .. 5%	Same guideline Continued
(iii) The 75% share of the Professional Team managing the patient shall be apportioned as follows: In Surgical Cases 50% to Surgical team of doctors 25% to Anesthetist team of doctors In Medical Cases Entire 75% to the team – (In case where Anesthetist services are utilized up to 25% to be provided to Anesthetist)	Surgical Cases: 55% to surgical team of doctors 20% to Anesthetist team of doctors. (For the cases managed in ICU, the Anesthetist team shall be given 25%) Medical Cases: Entire 75% to the team – (In case where Anesthetist services are utilized up to 25% to be provided to Anesthetist)
(iv) Further distribution among the above Surgical and Medical teams shall be on the following ratio for teaching/ APVVP Hositals. Professors/CSS .. 35% Associate Prof./Dy.CS .. 30% Asst.Prof./CAS .. 25% Residents(Sr./Jr.) .. 9% RAMCO(*) .. 1%	After excluding the % distribution to Residents (9%) and RAMCO (1%) the remaining 90% amount has to be distributed on the following ratio. 5% extra incentive to Prof./CSS 3% as extra incentive to Associate Prof./ Dy. CS The remaining shall be distributed equally amongst the existing faculty members i.e., Prof. / CSS. Associate / Dy. CS and Asst. Prof. / CAS In case the Professor/Associate Professor posts are vacant, the amount shall be equally distributed amongst the existing faculty.
(v) In case there are more than one person in any category, the amount shall be equally apportioned between them. In case the post is vacant in any category, the corresponding share shall go for the development of the Department	In case there are more than one person in any category, the amount shall be equally apportioned between them. 2nd sentence deleted.

/p.t.o./

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APPENDICES 12

LIST OF PUBLICATIONS AND PRESENTATIONS

PRESENTATIONS:

1. Health Care utilization in relation to Socio – Economic status in Rural Areas of Andhra Pradesh, September 2007.

2. Health Care utilization in relation to Socio – Economic status in Urban Areas of Andhra Pradesh, September 2007.

3. Free Medical Care and Health Status, August 2007.

4. Shortage of Medical Staff, September 2007.

5. Advancement of Medical Technology, October 2007.

6. British National Health Service, October 2007.

7. Physical standards in the Private Health Sector – A Case Study of Rural Andhra Pradesh, March 2008.

8. Private Nursing Homes and their Utilization: A case study of Secunderabad, March 2008.

9. Fee – For – Service Payment System in Medical Care – Merits & Demerits, January 2008.

10. Should Not – For – Profit Hospitals make profits? February 2008.

11. A Study of Contracting out of Dietary Services by Public Hospitals on Hyderabad, October 2008.

12. Behaviour of the Private Sector on the Health Services Market of Hyderabad, October 2008.

13. Study of difference in Health Care Utilization among Government Health Insurance Card Holders and Private Health Insurance Card Holders, March 2009.

14. Study of difference in Health Care Utilization among the Insured and Uninsured Population, March 2009.

15. Patient Satisfaction levels in Free – Health – Insurance Population, October 2009.

16. Does Free – Health – Insurance lead to excess delivery of Medical Care, in turn leading to Iatrogenic disease? Patterns of Appendicectomy in Two different Institutions in Andhra Pradesh, Hyderbad October 2009.

17.Methods to Prevent Excess delivery of Medical Care among Free – Health – Insurance Population in Andhra Pradesh, March 2010.

18. Patient Satisfaction in Private Vs Government Vs Autonomous Vs Public – Private – Partnership Hospitals in Hyderbad, Andhra Pradesh, March 2010.

19. Evaluation of Health education on Secunderabad, Andhra Pradesh, April 2011.

20. Impact of Changing Life Styles on the health in Hyderbad, Andhra Pradesh, April 2011.

21. Heath Status in Health Insured Vs Non – Insured Population, September 2011.

22. Changing Life Styles among Health Insured and Non – Insured population in Secunderabad Andhra Pradesh, September 2011.

23. Methods to Prevent Overconsumption among Medical insurance Patients by Health care Providers, November 2011.

24. Merits and Demerits of Rajiv Aarogyasri scheme in Andhra Pradesh, November 2011.

25. Prevalence of Obesity and its Influencing factors among Rural and Urban School Children in a remote district of Andhra Pradesh, South India. Presented in NIMS, Hyderbad, November 2011.

Publications

26. I. Bhaskara Raju, "Synovial Sarcoma Metastasis to the Heart Presenting with LV Dysfunction and Heart Failure", Journal of Indian college of Cardiology XXX (2013) 1-3, htpp://dx.doi.org/10.1016/j.jcdr.2013.04.002. Journal homepage: www.elsevier.com/locate/jicc.

27. I. Bhaskara Raju, "Evaluation of Endothelial function by Brachial Artery flow-mediated dilation in patients with type II Diabetes Mellitus", JICC Vol 2 No. 2 (2012) Page No. 75-78.

28. I. Bhaskara Raju, "Prevalence of Rheumatic and Congential Heart disease in School Children of Andhra Pradesh, South India". Journal of Cardiovascular Disease Research 4(2013) 11-14, Published by Reed Elsevier India Pvt. Ltd. Available at htpp://dx.doi.org/10.1016/j.jcdr.2012.11.003.

Lectures

Presented Many Lectures on the topic of research in (i) Gandhi Medical College, Secunderabad attended by all the Faculty and Post Graduate Students of the college. (ii) Gandhi Hospital, Secunderabad attended by all the Faculty and Post Graduate Students of the college. (iii) Presented the topic to the Principal Secretary, Ministry of Health, A.P. Secretariat, Government of Andhra Pradesh. (iv) Presented to the topic to the CEO of Rajiv Aarogyasri Trust, Y.S.R. Bhavan, Jubilee Hills, Hyderabad. (v) Presented to the topic to the Hon'ble Minister of Medical Education, Government of Andhra Pradesh, Hyderabad. (vi) Delivered a lecture at Christian Medical College, Bagyam, Vellore, Tamil Nadu on 17.07.2010 for the M. Phil in Hospital & Health systems Management participants on the

topic “The Role of Health Insurance on Health Care Delivery with Special Reference of Rajiv Aarogyasri, Health Insurance Policy” (Copy Enclosed in next page).

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DEPARTMENT OF HOSPITAL MANAGEMENT STUDIES &
STAFF TRAINING AND DEVELOPMENT

17.07.2010

ATTENDANCE CERTIFICATE

This is to certify that **Dr.Indukuri Bhaskara Raju**, who is invited to give a Guest Lecture on "The Role of Health Insurance on Healthcare delivery with special reference of Rajiv Arogyashree, Health Insurance Policy", delivered his lecture at Christian Medical College, Bagayam on 17.7.2010 for the M.Phil. in Hospital and Health Systems Management participants. This is conducted by Christian Medical College (CMC), Vellore; Birla Institute of Technology & Science (BITS), Pilani; Bombay Hospital, Mumbai & Bombay Hospital, Indore. We are indeed grateful for his time and contribution.

Samuel N.J. David
M.A.(Eco.), M.A.(PM&IR), M.Sc.(Psy), MBA, M.Phil.(HHSM)
Sr.Manager (Admn) & Head,
Dept. of Hosp.Mgt.Studies and
Staff Training & Development
Christian Medical College
Vellore - 632 004

BRIEF BIOGRAPHY OF Prof.(Dr.) I. BHASKARA RAJU.

1. 10^{th} standard : Passed in distinction in 1975.
2. 12^{th} standard: Passed in distinction 1977.
3. M.B.B.S Passed in 1984.
4. Internship in 1985.
5. M.S (Surgery) in 1988.
6. Plastic Surgery Registrar in 1989, T. N. Medical College Bombay.
7. Surgical Oncology Registrar in 1990, Cancer Institute, Madras.
8. Civil Asst Surgeon, Govt of A.P from 1991 to 1994.
9. Asst. Prof of Surgery Govt of A.P from 05-02-1994 to 06-09-2006.
10. M. Phil (HSSM) B.I.T.S., Pilani. Completed with Distinction 2007.
11. Ph. D., Qualifying Examination of B.I.T.S Pilani in 2007.
12. Asso. Prof of Surgery govt of A.P from 06-09-2006 to 24-07-2009.
13. C.E.O of Poulomi Group of Hospitals in 2007(Private, Part-time).
14. Prof of Surgery from 24-07-2009 to Till Date.
15. Likely to be Promoted and Posted as Dean in a Government Medical Institute. File presently in circulation in Govt of A.P.
16. Teaching to M.B.B.S., M.S(Surgery and Hospital Administration Students)

17. Examiner to M.B.B.S., M.S.,(Surgery) and to Hospital Administration Students of different Medical Colleges. Pinameneni Siddhartha Medical College (April 2008), GSL Medical College(Sep 2008),Asram Medical College (Sep 2009), Guntur Medical College(March 2010), Bangalore Medical College (July 2010), Raja Rajeswasri Medical College (July 2010),St. Johns Medical College(July 2010), S.V. Medical College (Aug 2010), RIMS Medical college (March 2011), Sri Devaraj Urs Medical College (July 2011), PES Medical College (Feb 2012).

BRIEF BIOGRAPHY OF THE SUPERVISOR

1. **Name** : Prof. (Dr.) V VISWESWARA SASTRY

2. **Designation** : Principal/Dean Gandhi Medical College, Secunderabad.

3. **Permanent Address/Telephone No./Email** :

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4. **Date of Birth** : **13th July, 1955**

5. **Education** :

Degree	Name of Institution/University	Specialization	Year
MBBS	Rangaraya Medical College / Andhra University	Under graduation	1972-1979
DPH	Kakatiya Medical College / Kakatiya University	Public Health	1981-1983
MD	Kakatiya Medical College / Kakatiya University	Community Medicine	1981-1984

6. Professional Career :

Organization	Designation	Key Responsibilities	Period
Gandhi Medical College-Hyderabad	Principal	Running/Heading the college	Till Date
Gandhi Medical College-Hyderabad	Vice Principal (Admin)	Helping Principal in administrative matters	2 years
Gandhi Medical College-Hyderabad	Professor & Head	Teaching medical graduates, and other jobs assigned by university	7 years
Kakatiya Medical College-Warangal	Tutor, Assistant Professor and Professor & Head	Teaching, Training, Conducting surveys, dissertation writing, learning and exercising in subject	21 years
The George Institute for Global Health – India.	Consultant	Verification & data collection of discharge case sheets for GSD of deaths in Gandhi hospital	3 years
UNICEF	Principal Investigator	Acceleration of consumption of iodized salt	July-2010 to June 2011
DLHS-4	Nodal officer	CAB study	Feb-2011 to July-2013

7. Work Description :

- Being the senior most Professors in service in the state of Andhra Pradesh conducted MCI inspection of medical colleges and PG institutes as per the direction of MCI

Teaching Community Medicine to undergraduate medical students, and facilitating Postgraduate students.

- Inspection of vocational training institutes as per direction of Andhra Pradesh Intermediate Board of Education
- Teaching theory and practicals in community medicine to under graduate and post graduate medical students. Guiding and conducting projects in the department. Guiding and helping PGs in dissertation works.
- Teaching Paramedical allied subjects such as BNYS, BPT (Physiotherapy), BSC (MLT).
- Conducting projects under progress in the department; doing research work and helping PGs in dissertation works
- Training of Internees in the department and field demonstration areas; delivering extension and guest lectures on various platforms
- Conducting investigation of epidemic outbreaks, AEFI (adverse events following immunization), maternal mortality audits, training of paramedical health care workers.
- Performing other tasks assigned by university from time to time, such as conducting exams, valuation of theory papers etc.,.

Presently finished working in the project titled '**Gates Grand Challenges Population Health Metrics Research Consortium Project in Andhra Pradesh, India'** on Validation of verbal autopsy tool, a collaborative multi country project. The collaborators for the study include the **Harvard University** and **Johns Hopkins University of**

Queensland in Australia, Research Institute of Tropical Medicine in Phillippines, institutions in Dar es Salaam and Pemba in Tanzania and **King George Medical University in Lucknow**. The project is sponsored by **'Bill and Melinda Gates foundation'.**

Also completed **'Universal Salt Iodization project in collaboration with UNICEF,** estimating Iodine in the salt consumed among house hold of high school students of 11 districts of Andhra Pradesh along with awareness increasing campaign. Earlier I have conducted the **prevalence study of endemic goiter in the tribal areas of Adilabad, Warangal and Khammam Districts under UNICEF sponsored scheme.**

Entered MOU with **National Institute of Health and Family Welfare, New Delhi** for conducting DLHS-4 (District level house hold survey-4) project in the state of Andhra Pradesh, which is expected to commence from Jan.2014.

8. Public Health Programmes :

- ***Polio***: As a member of rapid response team monitored pulse polio programme in various PHCs of Agra district of Uttar Pradesh. Conducted supervision of pulse polio programme as WHO monitor once in Warangal and Medak Districts of Andhra Pradesh..
- ***HIV/AIDS***: Participated in various training programmes conducted by NACO and APSACS.

- ***Tuberculosis***: Participated in RNTCP TOT training programme, Member of Task force of RNTCP-South Zone..
- ***Leprosy:*** Leprosy elimination monitoring survey in 2 districts of Andhra Pradesh, sponsored by world health organization
- ***Maternal Child Health***: Conducted verbal autopsy on maternal deaths reported from Nizamabad district.
- ***Reproductive Child Health:*** Participated in RCH training programmes conducted by APMHS, Government of Andhra Pradesh.
- ***Malaria & Vector borne diseases***: Recently conducted investigation into out break of dengue epidemic in Karimnagar District.
- ***Integrated Management of Neonatal and Childhood Illnesses***: Got trained and supervised the conducting of IMNCI programme in Medak District.
- ***IDSP***: Underwent TOT in IDSP as trainer of trainer to train medical officers of PHCs at JIPMER, Pondicherry.
- ***Immunization***: Conducted supportive supervision of Immunization programme in various districts of Andhra Pradesh in collaboration with PATH India.
- ***Tobacco Control***: Participated in No tobacco campaign in all schools of Warangal town in collaboration with an NGO, 'Health Action by People'
- ***PSBH (Problem Solving for Better Health)***: Attended more than 50 workshops on PSBH at various medical colleges all over India in the capacity of facilitator, and got appreciation for the work done.

9. Active Participation :

- Participated in free medical camps conducted by Rama Krishna mission in Hyderabad as well as in free camps conducted by various other NGOs in and around Hyderabad.
- Part of the team which did survey on prevalence of vitamin A deficiency disorders in Nizamabad district under UNICEF & NIN joint project
- Part of the team which prepared power point presentation of entire syllabus of community medicine
- Program in charge of PGDMCH (Post graduate diploma in maternal and child health) under Indira Gandhi National Open University for Andhra Pradesh
- A regular Participant in conferences of Community Medicine and Public health and Life member of Indian Medical Association, IAPSM (Indian Association of Preventive and Social Medicine), IPHA (Indian Public Health Association), & APCRI (Association for prevention and control of rabies in India)
- Published module for environmental sciences students of distance education under Kakatiya University and a medical dictionary in "English-English-Telugu" is underway for publication
- Regularly attended the free medical camps titled 'Gramasri' for two years with 'Rama Krishna Mission' of Hyderabad.

10. Supervisory Responsibilities :

- As a qualified person from community medicine got trained in TOT of all national health programs sponsored by national and international agencies.

Conducted supportive supervision from 'PATH INDIA' and did two rounds of supportive supervision in all districts of Andhra Pradesh and more than two rounds of supervision in Warangal and Ranga reddy districts.

- Conducted supervision of Pulse Polio Program as a monitor of WHO and also supervision of IMNCI program in Medak district.
- As a faculty member training of undergraduate and post graduate medical students is part of job and apart from medical students. I've imparted training to medical officers of PHCs of Ranga Reddy and Hyderabad Districts for IDSP.
- Examiner for PG & UG, as well as paper setter for UG & PG exams for various universities at national level.
- Trained field volunteers for NGO 'Operation Eye Sight' on 'Common Problems Encountered in Community', 'Personal Hygiene, 'Antenatal Care' and 'Immunization'.
- Assisted other university boards in conducting competitive exams such as 'EAMCET (Engineering and Medical Common Entrance Test)' every year in the state of Andhra Pradesh.
- As a program coordinator of NSS (National Service Scheme) for both Kakatiya and Gandhi Medical Colleges under Dr. NTRUHS conducted various camps and social activities.

11. Publications :

- Artificial feeding practices in rural community – a cross sectional study in Warangal area (Andhra Pradesh)-IJPH; Vol.xxxviii, No.1; Jan-Mar, 1994.

- A study on intra uterine deaths; Journal of Evolution of Medical and Dental Sciences/ Volume 1/ Issue 1/ Jan- March 2012
- Effective management efficient health care delivery; Proficient; international journal of Medicine; July, 2010.
- An article on Euthanasia (Mercy Killing); Journal of Evolution of Medical and Dental Sciences/ Volume 1/ Issue 2/ Apr- June 2012.
- Drug compliance and adherence to treatment; Journal of Evolution of Medical and Dental Sciences/ Volume 1/ Issue 3/ July- Sep 2012