Formulating Suitable Strategies to Improve Public Health Services in India with Focus on Infrastructure and Administration

THESIS

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By

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CERTIFICATE

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ABSTRACT

The public health system in India is plagued with wide-ranging problems and deficiencies. A lack of adequate facilities, shortage of drugs, corruption, near absence of accountability, and the unprofessional attitude of employees at various levels are, *inter alia*, only a few of these. All these together have crippled the public health system. The inefficiencies of the system and/or its operation have led to this sorry state of affairs where, despite the stated intent of the authorities, the public at large ends up receiving healthcare services far below their expectations. However, being the only provider of any credible medical care in most parts of rural India and also in several urban settings, the role of the public sector cannot be wholly ignored.

In the past, there have been numerous studies, but these had mostly focused on one or the other sub-component of the health system. As a result, these fragmented studies failed to present a comprehensive picture of the entire healthcare system. Standalone studies are of limited use as the solutions suggested in these when implemented, would very likely affect the other related components in one way or the other. Therefore, a more appropriate approach would be to formulate the overall strategy only after studying the health system as a whole and then, consistent with that strategy devise suitable strategies for the subsystems. The present study views the healthcare services as a holistic system, and then dwells on its various subsystems.

This research focuses on formulating such strategies which, if earnestly implemented, would have the potential to eliminate or, to a large extent, limit the ill-effects of the deficiencies that besiege the public healthcare system today. The objectives of this study, therefore, were to identify the problems of the public healthcare system and develop suitable strategies to address them.

Adopting a qualitative research design, the study began with an extensive desk research to acquire a clear understanding of the health system and its components. A perspicacious study of the secondary documents led to the identification of a host of problems in the public health sector, their probable causes and suggested solutions. In the next step, sets of semi-structured questionnaires were designed for each of the components. It was followed by in-depth, face-to-face interviews of respondents, placed at different hierarchical levels in various organizations. A total of 154 interviews were conducted across 12 states in the country. In addition, some focus group discussions were conducted at selected locations to iron out a few inconsistencies. All data obtained from

diverse sources was processed. The outputs comprised comprehensive lists of 230 problems, 486 causes and 623 solutions. An analysis of the set of problems revealed that a majority (55%) of them were rooted in the components 'administration' and 'human resources'. These were identified as the most critical areas that required immediate attention of the policy makers and program implementers.

Subjecting the set of solutions to a content analysis it was possible to develop a list of 50 keywords, which were then mapped onto eight key areas of focus viz. governance-planning, governance-execution, human resources, public awareness and community participation, corruption, finance, attitude, and coordination. A further analysis of the mapped output showed that about 80 percent solutions were directed to the first three focus areas.

Aside from the focus area wise solutions, the other inputs for strategy formulation were also looked into. These were a demand analysis and an environment analysis. The analysis of demand indicated that even with the most ambitious strategic initiatives it would take several decades for the supplies to match demands in the health sector. This implied that the demand for healthcare services would not have a restrictive impact on the formulation of strategy or limit its choice. The internal and external environmental analyses, comprising SWOT, were carried out to leverage on the strengths and opportunities and, at the same time, potentially neutralize the internal weaknesses and external threats, while formulating the strategies.

Considering all these inputs, the main strategy was formulated and then consistent with it sectional strategies were derived for each of the focus areas. Strategic Initiatives, an interface between strategy and its implementation, were also developed for each area. All strategies and strategic initiatives were first reviewed and verified through internal checks, and then sent for validation by external experts using the Delphi technique. The opinions of the experts were carefully reviewed and suitably incorporated to finalize the outputs of the study.

This research was an attempt to view the public healthcare system in its totality. The outputs are expected to be of help in developing an understanding of the critical areas and in providing insights into how the healthcare services in the public sector could be delivered more effectively and efficiently. It would also help the policymakers and programme implementers to address the long standing deficiencies in the healthcare system in the public sector.

TABLE OF CONTENTS

List of Tables

List of Tables

List of Figures

ABBREVIATIONS

ADB	Asian Development Bank
AIDS	Acquired Immune Deficiency Syndrome
AIIMS	All India Institute of Medical Sciences
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
AWW	Anganwadi Worker
AYUSH	Ayurvedic, Yoga, Unani, Siddha and Homeopathy
BCC	Behavior Change Communication
BPL	Below Poverty Line
BRICS	Brazil, Russia, India, China, South Africa
CAG	Comptroller Auditor General
CBHI	Central Bureau of Health Intelligence
CBHS	Community-Based Health Insurance Schemes
CGHS	Central Government Health Scheme
CDSCO	Central Drug Standard Control Organization
CHC	Community Health Centre
CME	Continuing Medical Education
CSR	Corporate Social Responsibility
DALY	Disability-Adjusted Life Years
DANIDA	Danish International Development Agency
DBT	Department of Biotechnology
DCI	Dental Council of India
DESA	UN Department of Economic and Social Affairs (DESA)
DFID	Department For International Development (United Kingdom)
DGHS	Directorate General of Health Services
DHS	Directorate Health Services
DM	Doctor of Medicine
DST	Department of Science and Technology
EAG	Empowered Action Group
EMOC	Emergency Management of Obstetric Care
ESI	Employees State Insurance Scheme
FAO	Food and Agricultural Organization
FGDs	Focus Group Discussions
FRU	First Referral Unit
FSSAI	Food Safety and Standards Authority of India
GAP	Good Agricultural Practices
GDP	Gross Domestic Product
GMP	Good Manufacturing Practice
HLEG	High Level Expert Group
HFW	Department of Health and Family Welfare

HR	Human Resource
HRD	Human Resource Development
HSEU	Health System Evaluation Unit
ICDS	Integrated Child Development Scheme
ICMR	Indian Council of Medical Research
ICT	Information Communication Technology
IDA	Indian Dental Association
IEC	Information, Education and Communication
IIHMR	Indian Institute of Health Management and Research
IMA	Indian Medical Association
IMEP	Infection Management and Environment Plan
IMF	International Monetary Fund
IMR	Infant Mortality Rate
INC	Indian Nursing Council
INR	Indian Rupees
IPHS	Indian Public Health Standards
ISO	Organization for Standardization
IT	Information Technology
JLI	Joint Learning Initiative
JNURM	Jawaharlal Nehru Urban Renewal Mission
JSY	Janani Suraksha Yojana
KPI	Key Performance Indicators
LHVs	Lady Health Visitors
LSAS	Life Saving Anesthetic Skills
MBBS	Bachelor of Medicine and Surgery
MCh	Doctor of Medicine/ Master of Chirurgical
MCI	Medical Council of India
MDG	Millennium Development Goals
MIS	Management Information System
MMR	Maternal Mortality rate
MOHFW	Ministry of Health and Family Welfare
MPWs	Multi-purpose health worker
MRLs	Maximum Residual Levels
MSG	Mission Steering Group
MTP	Medical Termination of Pregnancy
MWCD	Ministry of Women and Child Development
NAAC	National Assessment and Accreditation Council
NAAQS	National Ambient Air Quality Standards
NABH	National Accreditation Board for Hospitals
NBA	Nirmal Bharat Abhiyan
NABL	National Accreditation Board for Laboratories
NCD	Non Communicable Diseases
NDAPs	Non Degree Allopathic Practitioners

NDM	National Disaster Management
NDMA	National Disaster Management Authority
NFHS	National Family and Health Survey
NGOs	Non Governmental Organizations
NHA	National Health Accounts
NHPPT	National Health Promotion and Protection Trust
NHRDA	National Health Regulatory and Development Authority
NHRP	National Health Research Policy
NHSRC	National Health System Resource Center
NICD	National Institute of Communicable Diseases
NIHFW	National Institute of Health and Family Welfare
NIN	National Institute of Nutrition
NLEM	National List of Essential Medicines
NPPA	National Pharmaceutical Pricing Authority
NRHM	National Rural Health Mission
NSS	National Sample Survey
NSSO	National Sample Survey Organization
NUHM	National Urban Health Mission
NVBDCP	National Vector Borne Disease Control Programme
OBCs	Other Backward Classes
OOP	Out of Pocket (expenditure)
OTP	Over the Counter
PCPNDT	Pre Conception, Prenatal Diagnostic Test
PGIMER	Post Graduate Institute of Medical Education and Research
PHC	Primary Health Centre
PHE	Public Health Engineering
PHFI	Public Health Foundation of India
PHFs	Public Health Facilities
PM	Particulate Matter
PPCB	Punjab Pollution Control Board
PPP	Public Private Partnership
PRI	Panchayati Raj Institution
PS	Primary Survey
PSM	Preventive and Social Medicine
RCH	Reproductive and Child Health
RFD	Result Framework Documents
RHS	Rural Health Statistics
RKS	Rogi Kalyan Samiti
RMP	Rural Medical Practitioner
RSBY	Rashtriya Swasthya Bima Yojana
RTI	Right To Information
SAARC	South Asian Association for Regional Cooperation
SAUs	State Agricultural Universities

SBUs	Strategic Business Units
SC/ST	Scheduled Caste/Scheduled Tribe
SCs	Sub Centers
SDCOs	State Drug Control Organizations
SIHFW	State Institute of Health and Family Welfare
SOPs	Standard Operating Procedures
SRS	Sample Registration Survey
SS	Secondary Surveys
SWOT	Strengths, Weaknesses, Opportunities and Threats
TBA	Traditional Birth Attendant
TISS	Tata Institute of Social Sciences
TNMSC	Tamil Nadu Medical Service Corporation
TSC	Total Sanitation Campaign
U5 MR	Under 5 Mortality Rate
UGC	University Grant Commission
UHC	Universal Health Coverage
UK	United Kingdom
ULBs	Urban Local Bodies
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USA	United States of America
USAID	United States Agency for International Development
USFDA	United States Food and Drug Administration
VHSNC	Village Health, Sanitation and Nutrition Committee
W & CD	Women and Child Development Department
WHO	World Health Organization

Chapter 1

INTRODUCTION

1.1. Background of the Study
1.2. Health System in India
1.3. Public Health
1.4. Present Status of the Public Health Sector
1.5. Healthcare Segments
1.6. Rationale of the Study
1.7. Gaps in Research
1.8. Objectives of the Study
1.9. Scope of the Study
1.10. Significance of the Study
1.11. Research Methodology
1.12. Organization of the Report

1. INTRODUCTION

1.1. Background of the Study

India is one of the world's fastest growing economies. Unfortunately, the status of the healthcare services and its rate of improvement have not been commensurate with the changing pace of the economy. Public health in India presents a grim picture. Indicators show that nearly 42 percent children under five years of age are underweight ("Malnourishment a national shame", 2012); India accounts for the maximum number of maternal deaths in the world (Barnagarwala, 2014); approximately 2.1 million children born in India do not see their fifth birthday, and half out of these die within 28 days of birth (Sharma, 2008).

Clearly, there is a need to set right the entire system together with all its linkages. The healthcare industry consists of a large number of diverse stakeholders and any change that is brought about, deliberately or otherwise, can have a huge and cascading effect on these constituents, impacting seriously on the lives of people in the country. On the other hand, if no intervention is made it may not be possible to sustain the growing pace of the economy. With so much of government efforts and spending in the health sector, the indicators still do not show any remarkable improvements. According to the Human Development Report 2001 of the United Nations Development Programme (UNDP), as cited in Bhandari & Dutta (2007), India ranked among the lowest 40 countries in terms of its general human development indicators. Of the many measures that contributed to India's poor showing, health was one. Further, the rural-urban divide, besides the geographical and socioeconomic disparities in terms of availability, accessibility and quality of healthcare services, continues to remain a challenge despite the huge investments being made by the government under its banner of National Rural Health Mission (NRHM).

Rural India represents 69 percent of the country's total population (Chandramouli, 2011). 28.3 percent of the population, who belong to the 'below poverty line' (BPL) category (Planning Commission, 2014a), struggle for easy and better access to healthcare services. The unhappy situation in health is primarily due to unclean drinking water, unsafe living and working conditions, unsanitary environment, unhygienic birth practices, poor working of public health centers, and a general lack of awareness among the beneficiaries about the services they are legitimately entitled to. The healthcare centers in

the public sector are beset by shortage of hospital beds, understaffed public hospitals, poor maternal and child healthcare, coupled with unaffordable prices and indifferent attitudes of doctors (Ministry of Health and Family Welfare [MoHFW], 2005). And then there are times when people find themselves at the mercy of unqualified practitioners. Instances abound where farmers pay their hospital bills by mortgaging their land, making medical care the second most common cause of rural indebtedness, next only to agriculture. As a result of all this the status of health has now become a matter of major concern in India.

K. Sujatha Rao, a former Secretary in the Ministry of Health and Family Welfare, Government of India opined that "The absence of a well thought out policy framework for strengthening the health system is the most important issue facing the health sector in India" (Rao, 2013). With economic growth, progress and prosperity, there is now an enhanced awareness among the masses about the quality of healthcare service in India. Given the huge demand-supply gap, the healthcare environment in the country requires a slew of major initiatives in the public as well as private sector.

1.2. Health System in India

Healthcare is one of the largest service sectors in India (India Brand Equity Foundation, 2015). Figure-1.1 explains the structure of the health system comprising both the public and private health systems. The public health system consists of a primary healthcare setup, teaching hospitals, Employee State Insurance (ESI) hospitals, Central Government Health Scheme (CGHS) empanelled hospitals, and the healthcare facilities of the defence services and the railways. The basic structure of healthcare consists of a three-tier organization of health centers namely, sub-centers (SCs), primary health centers (PHCs) and community health centers (CHCs), and above these, there are sub divisional and district hospitals.

India has been a signatory to the Alma Ata and many such declarations. Being a member country of the United Nations and the World Health Organization (WHO), it proposes to achieve the millennium development goals (MGDs) and attain the idea of 'health for all'. In its stride to accomplish the country's goals for its health sector, the government operates various programs at the state and central levels. Over the last decade, the public system launched two major reforms namely, the National Rural Health

Mission (NRHM) and the Rashtriya Swasthya Bima Yojana (RSBY). The third reform, still in its nascent stage, is the National Urban Health Mission (NUHM), which is the urban counterpart of the NRHM. The NRHM was launched in the 'mission mode' in the year 2005 with the objective of improving the primary healthcare system, especially in the rural areas, and making it responsive to the needs of the people. With the aim of revitalizing the primary healthcare system, it has been working towards, *inter alia*, correcting the regional imbalances, integrating various vertical national programmes, and decentralizing the planning and implementation of health services. Although in effect NRHM was implemented throughout the country, yet it was specially focused on 18 states which had either weak healthcare infrastructure or returned poor health indicators.

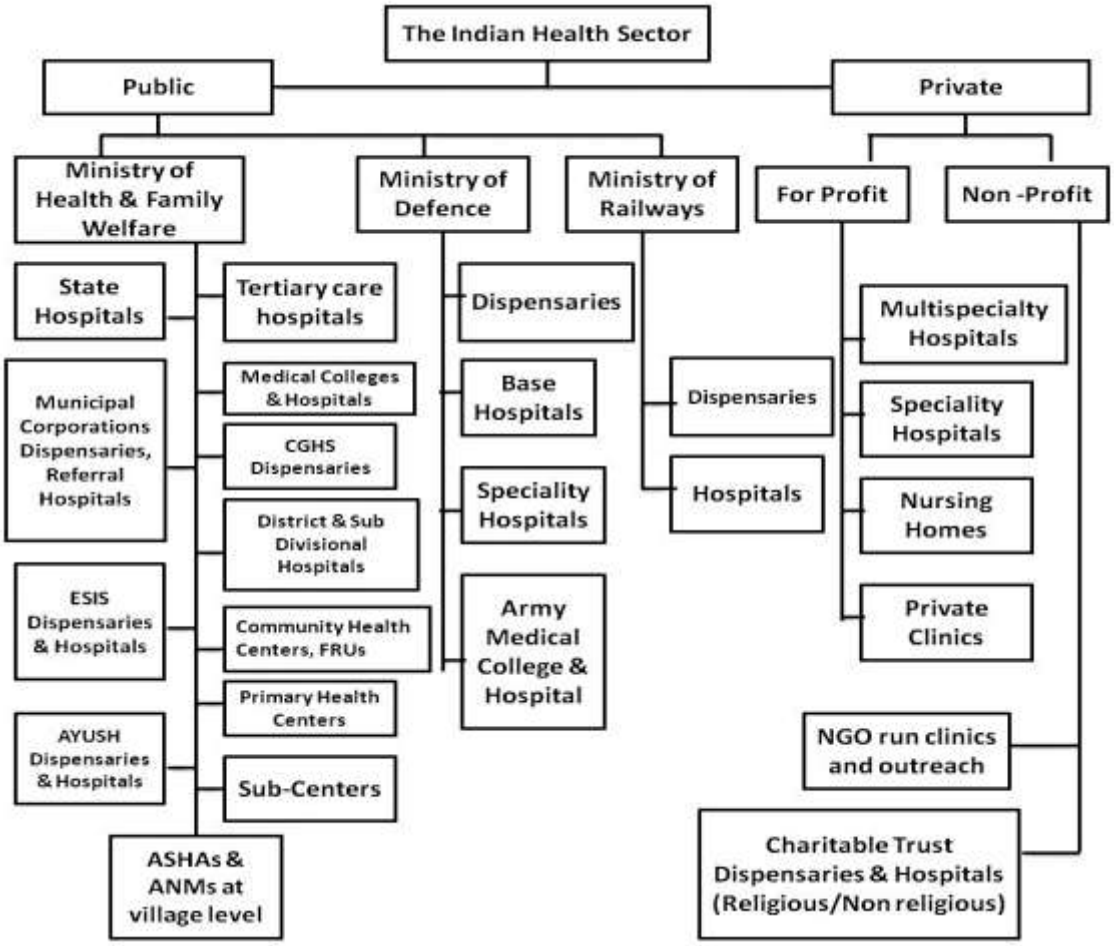

Figure-1.1: Organization of the Indian Health Sector

Note. From "India's Healthcare System- Overview and Quality Improvements," by P. Wennerholm, A. Muranyi, S. Yasmin & Z. Roy, 2013, Swedish Agency for Growth Policy Analysis

The second reform - RSBY, relating to health insurance - is the brainchild of the Ministry of Labor and Employment, and it targets people living below poverty line. They need only to enroll themselves in the scheme to become eligible for benefits which may be obtained free of charge at any of the empanelled public or private hospitals.

India has the most privatized healthcare system in the world (Raghuraman, 2012). The range of providers in the private sector are quite varied; it includes the herbal healer, the modern unqualified or quasi-qualified 'quack', and qualified practitioners of different systems of medicine, many of whom though are seen to be indulging in unseemly practices. The non-governmental organizations, societies, trusts and autonomous organizations are also a part of the private sector.

The health system faces an ever increasing demand for better services not merely to treat but also to prevent the occurrence of both the communicable and non-communicable diseases. The challenges are many: with strong economic growth, there is growing migration from rural to urban areas; the topography in some areas in the country makes access difficult; underdeveloped health insurance system limits cover for high out of pocket (OOP) expenditures; and then there is an unregulated private sector.

Given the enormous health needs, India falls awfully short of the required financial resources and the managerial capacity. India's public expenditure on health has been quite low, close to around 1% of the gross domestic product (GDP). Even, the total expenditure on health, that is, combining the public, private and external funds, has hovered around only 4% of GDP over the years (Central Bureau of health Intelligence [CBHI], 2013a). The public health system in India is plagued with various deficiencies such as underfunding, inadequate provision of service facilities, manpower shortage, etc. (Duran, Kutzin, & Menabde, 2014; Gupta & Rani, 2004; MoHFW, 2005; Planning Commission, 2008; Planning Commission, 2011a; Planning Commission, 2011b; Reddy et al., 2011a). These have crippled the system so much that people have lost all hope of regaining any confidence in the quality of public healthcare services. As an alternative, people find themselves pushed to seek these services from private providers. The yawning gap between the demand and supply has provided scope and impetus to the private sector healthcare facilities to flourish. Data shows that 78 percent of outpatients and 60 percent of inpatients are treated by the private providers. The private sector controls 80 percent of doctors, 26 percent of nurses, 49 percent of beds and 78 percent of ambulatory services (Planning Commission, 2012).

India's progress over the years is shown in Table-1.1. The improvement in national figures cannot overshadow the huge inter-state and rural-urban disparities. In 2012, the maternal mortality ratio in some of the most populous states like Uttar Pradesh, Rajasthan and Bihar was as high as 392, 255 and 219, respectively, per lakh live births ("State Wise Information-Bihar", n. d., para 2; "State Wise Information-Rajasthan", n. d., para 6; "State Wise Information-Uttar Pradesh", n. d., para 7). Other observed disparities include, differentials in per capita public spending on health, relative births attended by health personnel, proportional population served per government hospital bed, etc. (Kumar et al., 2011)

Sadly, the Indian healthcare system happens to operate in an environment with little or no control on what services can be provided by whom, at what cost and in what manner. A lack of standard protocols and poor functioning of the public health system, manifestly affect the quality of care provided to the population.

Table-1.1: Historical Trend of Some Parameters in India

Parameters	**1981**	**1991**	**2001**	**2012**
Population approx. (million)	680	850	1020	1210
% Decadal Growth Rate	24.66	23.87	21.54	17.7
Sex Ratio	934	926	933	943*
Crude Birth Rate	33.9	29.5	25.4	21.6
Crude Death Rate	12.5	9.8	8.4	7
Total Fertility Rate	4.5	3.6	3.1	2.4
Maternity Mortality Ratio	NA	NA	301+	178^
Infant Mortality Rate - National	110	80	66	42
Urban	NA	NA	42	28
Rural	NA	NA	72	46
Life Expectancy at Birth	**(1981-85)**	**(1989-93)**	**(1999-03)**	**(2006-10)**
Total	55.4	59.4	63.4	66.1
Male	55.4	59.0	62.3	64.6
Female	55.7	59.7	64.6	67.7

** 2011* *+ 2001-03* *^2010-12*

Note. From "Central Bureau Health Intelligence-Demographic Indicators," 2013b, and "Planning Commission," 2014a, 2014b

1.3. Public Health

'Public health' has been defined as "all organized measures (whether public or private) to prevent disease, promote health, and prolong life among the population as a whole. Its activities aim to provide conditions in which people can be healthy, and focus on entire populations, not just on individual patients or diseases" (World Health Organization [WHO], 2014).

Within the purview of this definition the health of public in India remains in the hands of both the government and the private sectors. The governments, both at the centre and states, because of financial constraints, have been very largely handicapped in the mission to provide the needed services to the entire population of the country.

The contribution of public expenditure on health has been really low, about one fourth of the total health expenditure. The balance three-fourth comes from private spending and external funds. Nonetheless, the public sector does play an important role by way of laying down the policy guidelines and regulatory framework, and planning and guiding the health services delivery system in the country. It is this public provision that ensures delivery of a certain minimum level of health services.

In providing healthcare services the objective of the private entrepreneurs has always been to earn a profit (MoHFW, 2005). The focus of the government, on the other hand, has always been on the discharge of its responsibility in maintaining the health of the public at large. The government may not have been able to run all its facilities profitably as compared to the private hospitals but, by and large, within its own limitations, it has strived to protect, prevent and prolong the health of the masses. Today, in many rural areas and also in several urban settings, the public sector is the only source of any credible medical care (Kumar et al., 2011). The role of the public sector therefore cannot be entirely discounted.

Under these circumstances, it is germane to identify the causes of the various weaknesses that affect the public health system today and suggest, wherever possible, suitable measures to remedy the same. This study focuses entirely on the healthcare services provided by the government sector. Hereon, the health system would mean to imply the public health system.

1.4. Present Status of the Public Health Sector

Balarajan, Selvaraj, & Subramanian (2011), citing WHO (2009), pointed out that globally, India - the world's second most populous country - accounted for 18 percent of total deaths and 20 percent disability adjusted life years (DALY). The chronic diseases like the non-communicable ones, accounted for 53 percent of deaths while the communicable diseases, maternal and perinatal conditions and nutritional deficiencies, accounted for 36 percent of deaths. This epidemiological transition (Reddy, Shah, Varghese, & Ramadoss, 2005) has further aggravated the challenges faced by the healthcare system in India.

Mr. Jai Ram Ramesh, the then Minister for Rural Development, had made a noteworthy statement that *"…Public health system in India has collapsed"* ("Our public health system", 2012). Also, the President of India, Mr. Pranab Mukherjee, made a profound statement when he said that *"…the health services for the poor cannot be poor health services"* ("Health services for the poor", 2012).

Public healthcare facilities are afflicted by some major ills like inadequate funding, inefficiencies at various levels, insufficient infrastructure be it in terms of number of facilities or health personnel manning them, problems of affordability, weak or ineffective systems, attitude of people in positions of authority, corruption, unethical practices, a total absence of accountability, a lack of access to drugs, inequitable distribution of services, etc. There are numerous studies that have highlighted the shortfalls in the health system (Baru, A. Acharya, S. Acharya, Shiva Kumar, & Nagaraj, 2010; Gupta & Rani, 2004; MoHFW, 2005; Planning Commission, 2011b; M. Rao, K.D. Rao, Kumar, Chatterjee, & Sundararaman, 2011).

The figures showing utilization of services in the public sector point to a declining trend with a concurrent increase in the usage of the private sector services, and this is true irrespective of the place of residence of the service seeker. As of 2004, the utilization of private facilities for outpatient care was 78 percent in the rural areas and 81 per cent in the urban areas. The utilization of government facilities for inpatient care declined from 60 percent in 1986–1987 to 40 percent in 2004 (Bahuleyan Nair & Durairaj, 2007). This also implies that there was a shift from the public to private facilities which in turn signified far too much OOP expenses.

As a result of the shortfalls and deficiencies in the public health system, a majority of the population depend upon private healthcare providers. Larger and wider role of private facilities makes it difficult for the poor to access healthcare. In a scenario where there are not enough guidelines to regulate private facilities and where the professionals largely lack in ethical conduct, healthcare is rapidly turning into yet another commercial commodity.

While the private sector may continue in this business for those who can afford its services, there remains a genuine need for the public sector to expand and offer healthcare services of good quality to the public at large at affordable prices (Planning Commission, 2013a). Before rolling out the 'Universal Health Coverage' plan (Planning Commission, 2011b), the public sector officials, involved in the planning and delivery of healthcare services, must factor in the existing weaknesses or else it will end up only as a yet another effort.

1.5. Healthcare Segments

The healthcare system in India can be viewed holistically by studying the 18 segments listed in Table-1.2. Each of these is briefly discussed below.

Table-1.2: Segments of Indian Health System

S.No.	Segment	S.No.	Segment
1.	Ministries & Departments	10.	Medical Equipment & Devices
2.	Other Organizations	11.	Education
3.	Health Policies	12.	Research & Development
4.	National Programs & Schemes	13.	Drinking Water & Sanitation
5.	Finance and Insurance	14.	Food Safety & Security
6.	Healthcare Facilities	15.	Environment
7.	Disaster Management	16.	Laws and Ethics
8.	Healthcare Manpower	17.	Regulatory & Controlling Authorities
9.	Drugs & Pharmaceuticals	18.	New Developments

1. **Ministries and Departments:** The health system is controlled and managed by the Ministry of Health and Family Welfare (MoHFW). It consists of four departments: the Directorate General of Health Services (DGHS), health research,

organization for Acquired Immunodeficiency Syndrome (AIDS) control, and AYUSH (an acronym for Ayurveda, Yoga, Unani, Siddha and Homoeopathy). Yearly allocation of funds to the health sector is decided by the Ministry of Finance. The Planning Commission reviews the reports submitted by the various working groups, formulates the Five Year Plan for the country, sets targets, and lays down the road map. Given the funds provided to it, the MoHFW strives towards achieving its targets.

The Ministry of Human Resource Development (HRD) and the Department of Education are responsible for the quantity and quality of manpower produced, and therefore, they seem to have an indirect impact on the functioning of the health department. The education department, in addition, implements the nutrition scheme (Mid Day Meals) to improve the health status of the school going children in the country.

Other than these, there are various ministries and departments that have programs, policies or schemes, directly or indirectly impacting on health, like Women and Child Development, Urban Development, Rural Development, Department of Drinking Water Supply, etc.

2. **Other Organizations:** National organizations like the National Health System Resource Centre (NHSRC), National Institute of Health and Family Welfare (NIHFW), etc., and international organizations like the WHO, Unites States Agency for International Development (USAID), the World Bank, Department for International Development (DFID), Danish International Development Agency (DANIDA), etc., provide technical and/or financial assistance towards improving specific health programs and strengthening the health systems in various states in the country. Together with these, Non Governmental Organizations (NGOs), civil societies and voluntary organizations also work, independently or in collaborations, towards improving the health services.
3. **Health Policies:** Different health and health related policies, as formulated by the government, include the National Health Policy, Blood Policy, Population Policy, Nutrition Policy, etc. These policies lay down the broad framework, roles, and responsibilities, to help achieve the public health goals and objectives.
4. **National Programs and Schemes:** To support its various policies, the government launched a number of programs and schemes like the National Vector

Borne Disease Control Program (NVBDCP), National Programs for Leprosy, Cancer, Tuberculosis, AIDS, Reproductive and Child Health Program, Janani Suraksha Yojana (JSY), etc., to name just a few.

5. **Finance and Insurance:** As health is a state subject, the main responsibility lies with the states to fund their health services. But, in part, the central government provides some financial assistance to state governments to help them meet their health requirements. Since health is majorly a non-revenue generating sector, the investments made are affected by the fiscal condition of the states. There are some programmes and schemes which are in part centrally sponsored like NRHM, NUHM, etc.

   To provide financial protection to people in the organized sector, there are schemes like ESIS, CGHS, etc., while RSBY is a scheme introduced by the Ministry of Labor and Employment, especially for the people who belong to the BPL category.

6. **Healthcare Facilities:** Specifically catering to the medical needs of the vast population, there are a large number of hospitals, medical colleges, nursing homes, polyclinics, day care homes, etc. Also, as a very important part of the health system in the public sector, there are three tiers of healthcare service centers namely, sub-centers at the village level, for every six sub-centers there is a primary health center, and for every four primary health centers there is a community health center. At the district level, there are district hospitals. All of these provide promotive and preventive health services and, curative care to people. The range of services offered widens, up the structure from the village to the district level. There also are super specialty hospitals in cities which provide services only for specific diseases/areas like, cancer, trauma, neurology, lung and chest, etc.

7. **Healthcare Manpower:** The manpower engaged in the planning and delivery of health services can be divided into two broad categories namely, the health and allied health professionals. The first group includes doctors, nurses and dentists. It also includes the professionals trained in the Indian systems of medicine, AYUSH, who are popular in specific communities and regions.

   Although, there is no clear description of what all the ‘allied health’ comprises, but broadly, it appears to encompass technicians, pharmacists,

physiotherapists, etc. Lately, a new cadre of public health professionals has emerged. It consists of health managers and administrators who take the responsibility of managing healthcare services in the private and public sectors.

The others, who assist in the delivery of healthcare services, particularly the national health programs, include workers in the public sector at the grass root level like the Accredited Social Health Activists (ASHAs), Auxiliary Nurse Midwives (ANMs), Trained Birth Attendants (TBAs), Multi-purpose Workers (MPWs), etc.

8. **Education:** Generating this large variety of healthcare workforce depends on the number and quality of educational institutes of different categories like, medical, paramedical including nursing, health management institutes, etc.
9. **Research and Development:** There are institutes and organizations involved in the research and development activities in the areas of basic or applied health sciences. These include, the Indian Council for Medical Research (ICMR), Department of Science and Technology (DST), Department of Biotechnology (DBT), the World Bank, the WHO, etc.
10. **Drugs and Pharmaceuticals:** After many years, in 2011, the government revised the national list of essential medicines (NLEM), consisting of 348 medicines. NLEM is a key instrument in the balanced delivery of healthcare for accessible, affordable, quality medicines at all primary, secondary and tertiary levels of care (Manikandan & Gitanjali, 2012). Apart from these, there are dispensaries and pharmacies - public and private - all across the country that provide prescription drugs and over the counter (OTC) drugs to the people. The drugs and pharmaceutical segment also includes clinical trials and research in the country. India happens to be a sought after destination for clinical studies.
11. **Medical Equipment and Devices:** These are various articles, instruments, apparatuses or machines intended to be used for prevention, diagnosis or treatment of illness or disease (WHO, 2012). The manufacture, import, maintenance and repair of these are equally vital, and are an integral part of the healthcare service delivery system.
12. **Disaster Management:** The management of disasters and natural calamities is now specifically looked after by the National Disaster Management Authority

(NDMA). It has national and regional offices to take care of the issues pertaining to disaster management in the country.

13. **Drinking Water and Sanitation:** These are among the basic facilities required for the survival of mankind. Though, not directly under the purview of the health department, these significantly affect the health of the masses.
14. **Food Safety and Security:** Apart from drinking water and sanitation, food safety and security are other pre-requisites to support a healthy population.
15. **Environment:** Environment is concerned with pollution of air, water, soil, sound, etc., and disposal of waste. It also includes drinking water and sanitation, food, and drugs, but these are treated as independent segments.
16. **Laws and Ethics:** There are numerous laws, rules and regulations in the country to aid in the smooth functioning of the system. Just to name a few, these relate to the biomedical waste management and handling, consumer protection, environment protection, pre-conception and pre-natal diagnostic techniques (PCPNDT), etc.
17. **Regulatory & Controlling Authorities:** These are the Medical Council of India (MCI), Dental Council of India (DCI), National Accreditation Boards for Laboratories and Hospitals (NABL & NABH), University Grant Commission (UGC), etc.
18. **New Developments:** Recent innovations and developments in the fields of telemedicine, medical transcription, medical tourism, health information and management systems, etc., are hugely impacting the private and public health sectors, and hence, new and emerging developments deserve to be considered as a separate segment.

1.6. Rationale of the Study

It is unfortunate that even after over six decades of independence the health sector has not received the serious attention that it deserved. Caring for the health of the public is a commitment enshrined in the constitution of India. Most of the health indicators point towards an abominable performance of the government in this sector. Clearly, there is an urgent need for a concerted effort to bring about a significant change in the quality of services to be provided to the people in this country. Addressing the plethora of issues,

which cause the sub-optimal performance of the health system, is a strategic imperative. It should be possible to improve the current state of affairs only if and when suitable strategies are formulated and conscientiously implemented. The objective, therefore, has to be to formulate suitable strategies with the potential to bring about essential changes in the quality of healthcare services in the country.

1.7. Gaps in Research

The numerous studies conducted so far have all taken fragmented views of different aspects of public health system. Except the reports of the 'national commission on macroeconomic and health' (MoHFW, 2005), and the 'high level expert group on universal health coverage for India' (Planning Commission 2011a), none of the other studies appear to have considered the public healthcare services as a unified system. The fragmented views of sub-components, even if true and complete, do not add up to the output of a comprehensive study. Adopting a patchwork approach to solve issues in the health system has been criticized by Gupta & Nair (n. d.). With respect to the reproductive and child health programme in India, they espouse a 'systems thinking' approach and suggest that the prudent way is to aim at "discovering the snake beneath the carpet rather than struggling to fix the bumps on the surface of the carpet, and seeing the 'whole' in the long run rather than just the parts in the short run". Arun Maira, a member of the Planning Commission of India, pointed out that rather than following the philosophy of reductionist approach and designing solutions as quick fixes which might result in further problems, the healthcare system in India required systemic changes (IMS, 2013). Duran et al. (2014) opined that making changes in the health financing alone would not yield the expected benefits unless it was supplemented by simultaneous changes in stewardship, provision of health services, and generation of resources and other inputs.

Referring to the reports of the 'national commission' and 'high level expert group', these were based on some surveys and, more importantly, on the experience of a few people, who were themselves involved in the writing of the reports as well. These reports, in the main, contain strategic initiatives but not the strategies per se.

According to the WHO document (De Savigny & Adam, 2009), any system is made up of many subsystems and these have a dynamic, non-linear relationship. The

solutions devised for one area cannot remain unaffected by the changes in other related areas. A systems thinking approach helps in understanding the underlying characteristics and relationships of the constituents of a system. As such, it is necessary to develop solutions for the entire system for it is not the same as the sum of the solutions of all sub-systems. The reasoning can be explained by the following argument:

If $f(Y) = f(X_1, X_2, X_3,)$

then, $Y_{max} = (X_1, X_2, X_3,)_{max}$ and <u>not</u> $Y_{max} = X_{1max} + X_{2max} + X_{3max}$

Here, f and (Y) respectively represent 'function' and the 'health system', and X_1, X_2, X_3, are various components (which are not entirely independent of each other) that make up the health system.

Therefore, even if standalone studies of components are useful in some ways, they will have little utility or effectiveness in terms of the purpose they would serve, were they required to contribute towards a comprehensive strategy. The preferred way to resolve a large number of disparate issues therefore requires a 'systems approach' in developing an overall strategy and from it may follow specific or sub-strategies for individual components.

The present research views the healthcare services as a comprehensive system and, only in that light it studies its various subsystems.

1.8. Objectives of the Study

The research question in the present study is: 'what strategy should the country adopt with a view to eliminate or limit the ill-effects of the various deficiencies that besiege the public health system'.

This research proposes to focus on improving the delivery of healthcare services in the public sector and aims at formulating suitable strategies to upgrade these services across the country.

Specifically, the objectives are:

1. Study and analyse the public health sector in India.
2. Identify deficiencies in the sector.
3. Assess the future demands and opportunities in the sector.

4. Formulate policies and strategies to upgrade services in this sector with specific focus on infrastructure and administration.

1.9. Scope of the Study

This research is confined to the study of the healthcare sector which is entirely managed by the government in India. Its domain does not include the private sector. The scope of study includes a clear understanding of healthcare, its constituents and constraints, and the identification of the problems and issues of concern, and developing of suitable strategies to address them.

1.10. Significance of the Study

The study is expected to be of help to understand the critical areas of the public health system, provide the policymakers with a set of suitable strategies to address the deficiencies in the system, and create a road map to ensure the delivery of quality healthcare services to the public, more efficiently and effectively. The data from this qualitative study may be of benefit to health officials involved in the planning and implementation of health programmes, and delivery of other health services. This thesis should be in a position to provide a ready reference to scholars involved in the assessment of problems in the health system. It would provide readers with a complete picture of healthcare in the government sector, and might be useful to academicians and teachers in enhancing their students' understanding of the subject.

1.11. Research Methodology

The study follows a qualitative research design. As this report contains a separate chapter devoted to research methodology, suffice it to mention here that it is based on the logic of first identifying the problems and issues that affect the performance of the health sector, and then developing suitable solutions to address them. Finally, grounded on the nature and range of solutions, suitable strategies are formulated, verified and validated.

1.12. Organization of the Report

The present work of research is organized in seven chapters as explained below:

The thesis begins with an introduction to the subject. It briefly describes the constituents of the public health sector in the Indian economy, and explains the objectives, rationale and the significance of the study.

The next chapter, titled 'review of literature', puts together in detail the important observations culled out from a plethora of literature relating to public health in general, and issues of concern for this study in particular.

Chapter 3 explains the methodology adopted for the study. It also spells out the specifics of the research design. Beginning with the findings of literature survey, which provide the foundation for the primary survey, the methodology takes the reader through all basic steps essential for formulation and evaluation of strategy.

It elaborates on the collection of primary data which, besides serving as the basic input for a detailed analysis, also identifies such observations from desk research that are at variance with the findings of primary survey. These deviations are ironed out through a few focus group discussions, the details of which are also provided here.

Chapter 4 presents a detailed study and analysis of survey outputs. It leads to a comprehensive list of problems and issues that evidently afflict public health in India. This data is further processed with a view to develop a reasonable set of areas of focus for the formulation of the main and sectional strategies.

Chapter 5 discusses the demand for healthcare services and the environment in which the public health system functions.

Chapter 6 dwells on the formulation of the main strategy and its evaluation, both for internal consistencies and external validation. It ends with lists of sectional strategies and strategic initiatives for each focus area.

Chapter 7 presents the conclusions of this thesis, complete with the limitations of the study, suggestions for future work in this area, and the specific learning that the researcher acquired in the course of this research.

Chapter 2

REVIEW OF LITERATURE

2. LITERATURE REVIEW

The economic growth in India has been commendable, particularly ove decade. Unfortunately, however, it has not translated into perceptibly improv outcomes. Compared to the countries of SAARC (South Asian Association for Regional Cooperation) or BRICS (Brazil, Russia, India, China and South Africa) the health outcomes of India have remained relatively poor, as shown in Table-2.1. Figures for the developed countries like the United States of America (USA) and the United Kingdom (UK) are also provided in the same Table to highlight the differences in performance. A comparison of the infant mortality rate (IMR) shows that only Pakistan and Afghanistan were below India in both the years 2000 and 2013, and in the case of the maternal mortality ratio (MMR), India ranked among the bottom four countries of BRICS and SAARC in the year 2000, and in the bottom two in the year 2013! Although, over the last decade, the MMR came down by about 49%, yet a comparison with its counterparts shows that India still has much more ground to cover.

Table-2.1: Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR)

S. No.	Country	2000		2013	
		IMR*	MMR	IMR	MMR
1	United Kingdom	5.6	11	3.9	8
2	United States	7.1	13	5.9	28
3	Brazil	28.9	85	12.3	69
4	Russian Federation	19.7	57	8.6	24
5	***India***	**66.5**	**370**	**41.4**	**190**
6	China	30.2	63	10.9	32
7	South Africa	51.7	150	32.8	140
8	Sri Lanka	14.0	55	8.2	29
9	Maldives	35.2	110	8.4	31
10	Bhutan	58.9	390	29.7	120
11	Nepal	60.4	430	32.2	190
12	Bangladesh	64.4	340	33.2	170
13	Pakistan	87.9	280	69.0	170
14	Afghanistan	94.5	1100	70.2	400

* Per 1000 live births

Note. From "Mortality rate, infant & Maternal mortality ratio-The World Bank", 2000 & 2013

India finds itself in the unfortunate position of suffering from a dual burden of disease. While it is still struggling to combat infectious diseases, the disease burden due to non-communicable diseases (NCDs) is on the rise. Figure-2.1 shows the disease burden of India for the year 2008. It is noted that the disease burden due to NCDs was more than that due to the communicable diseases, signifying huge direct and indirect cost implications, both for the people and the economy.

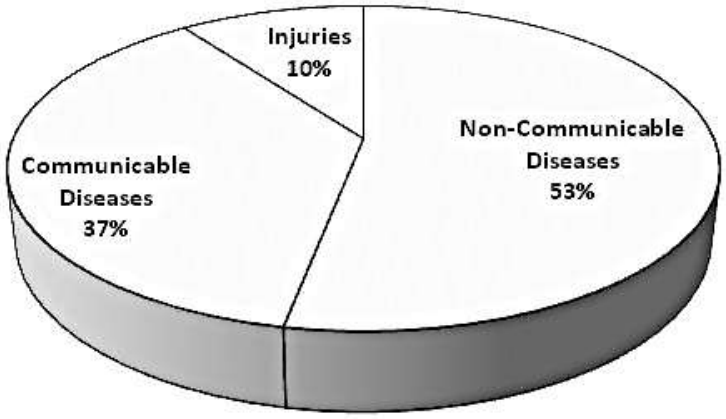

Figure-2.1: Disease Burden (Percentage share of Total Deaths)

Note. From "Mortality Burden of India-Estimated Number of Deaths by Cause", 2008

India showed its commitment to improve the health of its population by being a signatory to Alma Ata and thereafter MDGs. The overall state of health does show some definite improvement over the years since independence. As per the recent statistics, the national average for the birth rate and the infant mortality rate decreased from 36.6 to 21.6 and 139 to 42 from the year 1972 to 2012, respectively; the total fertility rate decreased from 5.2 to 2.5 (Planning Commission 2014b, Planning Commission 2014c), and the life expectancy at birth increased from 55.4 to 66.4, over the years 1980 to 2013 (United Nations Development Programme, 2014). Despite these improvements, there are huge variations in the health statistics across the states. Even the caste-wise statistics, as shown in Figure-2.2, are disturbing. Large inequities in health services and access to these continue to persist or even widen across states, between rural and urban areas, and within communities. It is observed that between the years 1998-99 and 2005-06, the average annual rate of reduction in the under five mortality rates (U5MR) of 3.9% among scheduled tribes (STs) and 4.2% scheduled castes (SCs) were lower than those among the

other backward classes (OBCs) at 4.8%, and the rest of the population at 4.6% (Baru et al., 2010).

It is also noted that individuals with the greatest need for health services in India had the greatest difficulty in accessing them and were least likely to have their health needs met (Balarajan et al., 2011; Sen, Iyer, & George, 2002; Singh & Ladusingh, 2009).

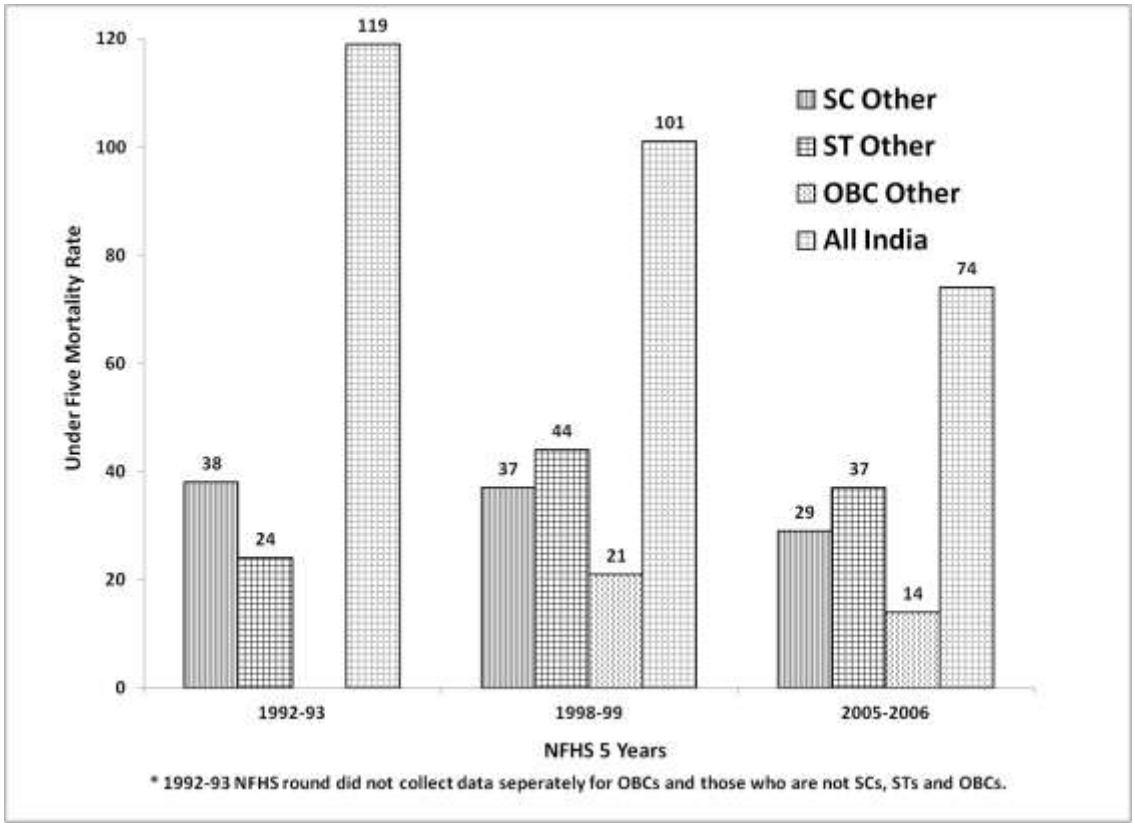

Figure-2.2: Under Five Mortality Rate (U5MR)

Adapted From: "Inequities in access to health services in India: caste, class and region," by R. Baru, A. Acharya, S. Acharya, A.K. Shiva Kumar and K. Nagaraj, 2010, Economic and Political Weekly, 45(38), pp. 49-58)

Notwithstanding the national overall improvement over the years, health indices of the country were far below those of the other developing and developed countries (World Health Organization [WHO], 2011). India, accounted for 21% of the disease burden globally. About two-thirds of the total morbidity burden and about 53% of total deaths were attributable to the NCDs in the country, and it was expected to increase from 40.4% (1990) to 59% by 2015. The issue of declining gender ratio continued to be a major cause of concern. India ranked at 122 among 168 countries in gender equality.

The WHO's assessment of the Global Burden of Disease highlighted that 627,000 Indians died early in 2010 from exposure to ambient air pollution. A study by the World

Bank estimated that in 2013 India lost Rs. 2 trillion, or about 3% of its GDP, from exposure to air pollution and its resultant health impacts. Environmental pollution was identified as a major threat to public health. Several studies and reports have noted the growing concern arising from environmental degradation. Pollution in its various forms aggravated the environmental burden of disease. With rapid industrialization, considerable increase in transportation, poor emission standards, etc., the pollution in the environment has been on the rise. A WHO air quality database revealed that 13 Indian cities featured among the top 20 in the world on monitored levels of particulate material PM2.5 - a measure of National Ambient Air Quality Standards (NAAQS). Topping the list was Delhi, while the others were Patna, Gwalior, Ahmedabad, Lucknow, Kanpur, Amritsar, Ludhiana and a few others. A vast body of scientific research is known to confirm the effects of inhaling particulate matter (PM) on health (asthma, lung cancer, cardiovascular and respiratory diseases, birth defects, premature death, etc.) (S. Sharma, 2014).

Health gets affected by a range of complex and inter-related factors. Some of the distal determinants of health are unplanned urbanization, water and sanitation crises, unhealthy trade policies, climate change, etc.

One of the formidable challenges before the government has been to provide clean and safe drinking water to the masses. According to the WHO estimates, 88% of the total disease burden was attributable to unsafe water supply, sanitation and hygiene, and was mostly concentrated on the children in the developing countries ("Burden of disease and cost-effectiveness estimates", n. d., para 1). The goal of the Rajiv Gandhi National Drinking Water Mission was to provide potable water to the rural population at a convenient location at all times. According to the economic survey 2012-2013, the percentage of population with access to safe drinking water was approximately 82% for the rural and 91% for the urban population (Planning Commission, 2013b). During an evaluation study it was observed that although the proportion of households with access to safe drinking water was quite high (85% to 100%), the proportion reporting safe and sufficient water supply round-the-year was much less (54% to 76%) (Planning Commission, 2010a). Providing sustainable drinking water to the masses, therefore, is a big challenge. Issues like the availability of water sources, quantity and quality of water, and other challenges like the non-uniformity in the levels of awareness, socio-economic development, practices and rituals, etc., add to the complexity of the task of providing

drinking water to the masses. In a study by Sathyamala et al., (2012), the problems identified were the supply of potable water, receding levels of groundwater, and contamination of water with metals and elements like fluorine, etc. The intensity of the problems varied between the surveyed districts and villages. The disease burden due to poor water quality is enormous. It was estimated that annually around 37.7 million Indians were affected by waterborne diseases, 1.5 million children were estimated to die of diarrhea alone, and 73 million working days were lost due to waterborne diseases each year (Planning Commission, 2010a). Waterborne, acute encephalitis syndrome affected close to 95% of all cases, especially children, in eastern Uttar Pradesh - a belt where encephalitis was endemic. In these places, shallow hand pumps in which the water got easily contaminated, posed a big threat (Shrinivasan, 2012).

Improper disposal of hospital and domestic waste is a threat to the health of the community at large. Besides being hazardous for humans it also pollutes (air, water, land) the environment. Various infectious diseases and occupational hazards are attributed to poor waste management. Harmful practices such as dumping of bio-medical waste in municipal dustbins, open spaces, water bodies, etc., and emissions from incinerators and open air burning, also lead to exposure to hazardous gases which can cause cancer, respiratory diseases, etc. The issue of improper waste management is well documented in various studies (Mohankumar, 2011; Sharholy, Ahmad, Mahmood, & Trivedi, 2008). Rapid industrialization, urbanization, and migration of people towards cities, lead to rising quantity of wastes produced. Poor methods of collection and inadequate transportation cause avoidable accumulation of municipal solid waste (MSW). Added to this is a lack of suitable facilities for the treatment and disposal of MSW. Irrational disposals adversely impact on people as well as the environment.

Open defecation is recognized as the root cause of many a disease resulting from poor sanitation. To eliminate this problem the government launched a public health initiative called ‘Nirmal Bharat Abhiyan’ (NBA). However, the government’s attempt at building community latrines at considerable costs did not quite meet with success. A study (Sathyamala et al., 2012) found that in the states surveyed, defecation in the open was still the norm. The reasons attributed were the centuries old tradition and inadequate supplies of water. Getting people to build latrines in rural areas resulted in engendering hostility; if at all the latrines were built, they were not used. The objective was simply to meet the targets so as to avert penalties on individual households and villages. The task of

maintaining toilets has been traditionally assigned to people of a particular caste. As a result, even though people of the upper castes might use the facilities but they would not take upon themselves the responsibility to maintain them. Also, the design of the latrines has been such that it presented the threat of oro-faecal contamination of water. The shallow latrines, built near the houses or source of water, carry the potential of contaminating the groundwater and spreading waterborne diseases.

The quality of food consumed is another determinant of health. Ensuring food safety for the masses is critical from the perspective of public health. Inadequate scientific research and testing facilities, poorly trained food quality personnel, and the general public apathy, have led to ineffective quality management and abysmal food safety standards. Instances of reporting food adulteration are many. A survey conducted by the Food Safety and Standards Authority of India (FSSAI) revealed that most Indians were consuming detergents and other contaminants through milk. Approximately 70% of the samples collected and tested for quality standards did not conform to the prescribed norms (National Survey on Milk Adulteration, 2011). The laxity in food testing was highlighted by a steady decline in the number of samples examined over the years from 133,242 in 1981 to 85,588 in 2002 (Chakrabarti, 2013). The study reported a similar decline in the percentage of legal prosecutions relating to adulterated samples. There were other studies which reported the presence of adulterants in food, making it hazardous for the consumers (Lopez, 2009; Singh, Sharma, & Bhatt, 2011).

Several acts, particularly legislations relating to food safety, are not comprehensive enough. Many of these have not been revised for ages. All this has led to several problems for the administration to contend with. A report (Kulshrestha, 2013) identifying lacunae in India's Food Adulteration and Insecticides Act drew attention to the fact that it hardly mentioned much about issues relating to 'advertising', defeating the very purpose of providing safety by way of legislation. The Code of Conduct of the Food and Agricultural Organization of United Nations (FAO), on the other hand, includes specific provisions relating to 'advertising'. Similar provisions need to be incorporated in the Indian legislations so that farmers do not get misguided/ lured by untrue merits of products in advertisements. Also, indiscriminate use of pesticides hampers food safety. When chemical substances are used in the process of development or production, residues get left behind on the commodity. As per good agricultural practices (GAP), only registered pesticides should be used, and used judiciously, otherwise there can be

buildups of pesticide residues on the crops, exceeding the limits of tolerance/maximum residual levels (MRLs). Several studies validated this view (Abhilash & Singh, 2009; Battu, Singh, Kang, & Joia, 2005; Karunakaran, 1958). Possible reasons for poor food quality include indiscriminate use, use of misbranded pesticides (including spurious ones), use of unapproved pesticides or continuing with certain pesticides which are restricted or banned for use, treating of fruits and vegetables with pesticides, malpractices, etc. A study conducted by the National Institute of Nutrition (NIN) showed that pesticide residues in some of the vegetables were found to be well beyond the internationally stipulated levels (Sood, 2012). The real problem is that most of the pesticides used in the country are not even registered with the Central Insecticide Board and Registration Committee. Therefore, it is quite likely that the chemical compositions of such pesticides do not conform to the required standards; also, in the semi-urban areas crops are grown by people who had never received any guidance on GAPs. They are neither covered by FSSAI nor do they fall within any agricultural capacity building programme. The fallout is that there are no checks. Injudicious presence of pesticide residues does harm human health (Gupta, 2004). Almost after two years of the findings of a study that noted harmful levels of pesticides in fruits and vegetables in the Delhi markets, the central government formed an expert committee to review the situation and frame a policy to check pesticide residues in eatables. Another contributing factor to the menace is that the state agricultural universities (SAUs) bypass the registration committee and directly issue recommendations towards use of pesticides (Kulshrestha, 2013). A study conducted by the Post Graduate Institute of Medical Education and Research (PGIMER) in association with the Punjab Pollution Control Board (PPCB) reported the presence of mercury, lead, chromium, cadmium and selenium in ground and surface water above the permissible limits. The report also mentioned that heavy metals and pesticides were detected in the samples of fodder, vegetable, milk, urine and blood (Thakur, Rao, Rajwanshi, Parwana & Kumar, 2008). All of these were the cause of gastrointestinal problems and genotoxicity among people living in the area.

Other acts like the Drugs and Cosmetics Act are also riddled with loopholes. Furthermore, as this act covers both the drugs and medical equipments, it turns out to be the cause of much consternation to the manufacturers of medical devices.

Next, among the numerous problems in the delivery of healthcare services a major one is ‘coordination’. The Ministry of Health and Family Welfare (MoHFW) is

responsible for coordinating with a host of ministries and departments which, directly or indirectly, are involved in meeting the health needs of the population. The bodies with which the ministry is required to coordinate are shown below.

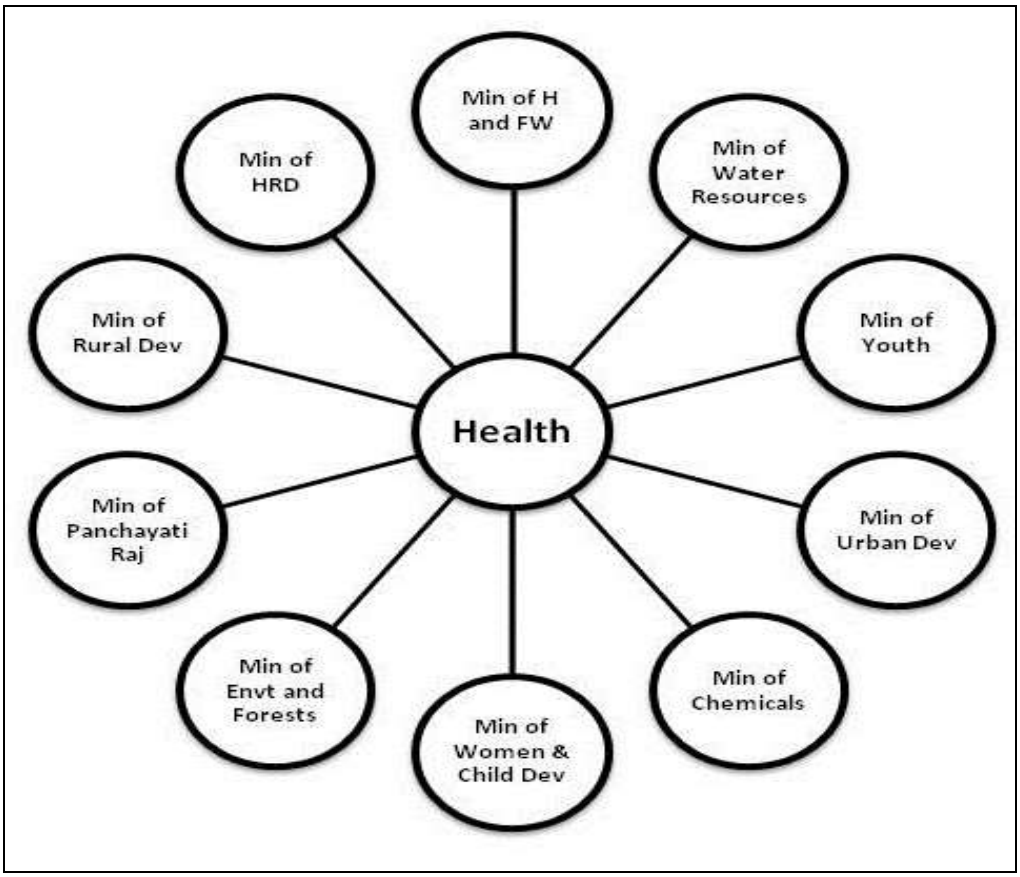

Figure-2.3: Related Ministries and Departments

To take care of the nutritional needs of children this apex body has to coordinate with the Ministry of Women and Child Development through the integrated child development scheme (ICDS), with the Ministry of Human Resource and Development for the mid-day meal programme, with the Ministry of Youth, Culture and Sports for programmes on adolescent health, with the Ministry of Drinking Water and Sanitation for programmes on provision of safe drinking water and sanitation services, and with a host of other ministries including, the Ministry of Panchayati Raj, and the municipal corporations. It is required to work closely with the Ministry of Chemicals and Fertilizers, which controls the Pharmaceutical industry in India. Medical equipments and devices, medical and information technology, insurance, tourism, etc., are the other sectors with which the health ministry and departments are required to coordinate.

Obviously, therefore, with such a large number of ministries and departments to keep in touch with, coordination and synergy at the inter-sectoral and inter-ministerial levels presents an enormous challenge for the health system.

According to the constitution of India, health is primarily a state subject. It is therefore the responsibility of the states to take care of the health of its people (MoHFW, 2006). Public health and sanitation, hospitals, and dispensaries are exclusively states' responsibility. Despite being a state subject, some health related provisions are also included under the center and concurrent lists. The union/center list includes port quarantine, census, and the maintenance of standards in higher education, research and scientific technical institutions. The concurrent list is concerned with the 'prevention of the extension from one state to another of infectious or contagious diseases or pests', issues relating to food and drugs, registration of vital statistics, and medical education (Gupta, Khaleghian, & Sarwal, 2003; Kishore, 2010). However, the center, by virtue of its relative financial strength, technical resources and political leverage, exercises considerable control over the provisions of health. As a result, it greatly influences the development of health policy, design of programs, and the setting of the health objectives and priorities. In a study by Gupta & Rani (2004), the authors found that the agenda of the public health policy was essentially developed by MoHFW, and that the ministry was loathe to ensuring wider participation in defining or discussing the policy options. Little efforts were made to identify or engage potential partners in achieving health improvement, or to involve stakeholders in the process, or inform decision makers and the general public of the likely consequences of implementing the health policies so designed.

Traditionally, the organization of (MoHFW) had four departments namely, health and family welfare (HFW), AYUSH, health research, and AIDS control. Later, the AYUSH department was carved out as a separate ministry and christened as the ministry of AYUSH, and the AIDS control department was renamed as the National AIDS control Organization. The DGHS, an attached office under the department of Health and Family Welfare (HFW), provides technical assistance and is engaged in the implementation of various national health programmes.

The three major services provided by a health system are:

- population-wide preventive services such as reducing exposure to diseases through environmental and sanitary measures,

- clinical preventive services such as screening, vaccination, etc., and
- medical care services.

Over the years, the public health services unwittingly got marginalized because of the central policies. Following the recommendation of the Bhore Committee in 1946 (Government of India, 1946), a decision was made to amalgamate the medical and public health services with a view to increase the efficiency and/or coordination between these two services. Most of the states followed suit. In addition, following the recommendation of the Jungalwalla Committee in 1967 (Directorate of Health Services, 1967), the health services was made into a unified cadre with a common head. Earlier, both these services had separate structures and each had its own cadre. However, with the amalgamation, the career incentives for the public health services got entirely compromised. As a result, the recognition and importance of public health got overshadowed by the medical care services, which happened to enjoy far more visibility and political attention. Gradually, the purpose and capacity of public health in terms of policy and planning lost its value and luster.

Interestingly, the Directorate of Public Health in Tamil Nadu retained its independence as an entity quite distinct from the medical services department. The directorate had its own budget and manpower as well as a Public Health Act. The better organized and managed health services in the state helped it to contain outbreaks and major disasters including, for example, the tsunami. Gupta, Shukla, Somanathan & Datta (2009) mentioned in their policy paper titled 'How might India's public health systems be strengthened', that although the per capita health spending in Tamil Nadu was about the same as India's average, yet this state turned out far superior health outcomes than most other states, including those with greater per capita expenditure. It is also worth noting that despite spending only about 1% of its gross domestic product on health, this region was able to make great progress in improving the health of its population (Balabanova et al., 2013).

It is evident from the examples of Tamil Nadu and countries in the developed world that it is the better organizing and managing of public health systems that helps to better protect the health of its people.

In India, it is the health ministry and its departments which engage themselves in building vast networks of publicly funded medical care services, education and research facilities, etc. Traditionally, the centrally sponsored interventions and programs were

single issue programs, adopting more often a vertical approach. Typically, even the international donor agencies sponsored and supported single-focus programs. Since the states received donor funds and financial help from the center, they showed a keener interest in implementing such programs. Such partially- or fully-funded programs became high priority for states, and in the process their other public health priorities got sidelined. Although, this approach might have yielded some success in controlling certain diseases where highly effective medical interventions were available, it has really not been of much help in controlling diseases like malaria where multi-sectoral interventions are required (Gupta, 2005).

The NRHM, a flagship program of the central government, took upon itself to integrate these single issue programs. Launched in 2005 to revive the primary healthcare, it is still in the process of making architectural corrections, especially in the rural areas.

As mentioned by Gupta et al. (2009), the Public Health Engineering (PHE) services were separated from the health departments in the early 1970s. It severely affected the capacity of the health department to ensure environmental health. The PHE department used to be responsible for much broader range of activities, but today its activities are confined only to supply of water and/or solid and liquid waste management. Much later, there was another decision that dealt a severe blow. Amalgamating of all male workers placed at the grassroots level into 'multipurpose workers' gravely affected the environmental health services. This cadre was responsible for helping in the implementation of national programs, often single issue ones, at the grassroots level. As the family welfare and maternal and child health were government's priority areas, the salaries for the female health workers were provided by the central government while providing that for the male health workers remained the responsibility of the states. As a result, the states are no longer interested in engaging male workers. With growing vacancies and undefined roles and responsibilities, this has become a dying cadre. Table-2.2 explains the present situation.

The health ministry and the health departments are staffed by professional administrators and technical people, and are often headed by people from the reputed administrative services, or in some cases, clinical care specialists. Usually, they lack an appreciation of or exposure to public health or the health sector. As a consequence, they are not able to contribute much to the planning or implementation, or advocacy in public health.

Table-2.2: Number of Healthcare Workers (Male) at Sub Centers

Health workers (Male) at Sub Centers (SCs)	Absolute Number
Required	152,326
Sanctioned	90,679
In position	55,445
Vacant	36,720
Shortfall	96,896
SCs without male health worker	72,742
SCs without ANMs or/and male health worker	4,935

Note. From "Rural Health Statistics-Table 17 and Table 18", 2014a, MoHFW

There are many similar managerial and governance issues which inadvertently affect the efficiency of the health system. The lack of capacity to effectively utilize the available resources has been illustrated in various studies (Ramani et al, 2010).

Despite repeated recommendations by the various committees set-up by the government, the mandate of putting in place a separate cadre for public health is yet to see the light of day. Public health has remained the Cinderella of the health system for far too long.

People with a background and experience in public health can be useful not only in the implementation of programmes but also in providing the much needed technical help to the states. Following the amalgamation of public health with medical services, the demand for the former diminished and so did the development of this cadre. The All India Institute for Hygiene and Public Health, one of the premier institutes for public health and renowned the world over, gradually lost its importance. Of late, steps are being taken to revive the institutes which offered public health courses. However, until some clear and concrete career progression paths are established for this cadre, people would really not be much inclined to joining it.

The healthcare system in India, as mentioned earlier, comprises a mix of public and private providers. There is a very large network of public health facilities at the primary, secondary and tertiary levels. These facilities provide services to people either at no cost or at a very low cost.

India's total expenditure (government and private) on health in 2007 was about 4.1 percent of GDP. The figure for public expenditure in the same year was just about 26% of the total expenditure (Rao & Choudhury, 2012), which was the lowest among all BRICS countries. Expenditure in public health is marked not only for fighting diseases, but it also plays a significant role in poverty reduction and economic development of the country (MoHFW, 2005). Low investment in health is a noteworthy cause for poor functioning and underutilization of the public health system (Baru et al., 2010). A study by Savedoff (2003) suggested that a country had to spend at least around 5 percent of GDP on health to generate better health outcomes. Most of the developed countries spend a high proportion of GDP on health, but in India the government's spending on health has hovered around only one percent of GDP, in spite of it returning some of the worst health indices. India's spending on health is recorded as one of the lowest compared to the international levels of health spending. It was noted (WHO, 2011) that India ranked at the bottom vis-a-vis other countries with respect to its per capita expenditure, health expenditure as a percentage of GDP, and public expenditure as a percentage of the total health expenditure.

It was also noted that approximately three quarters of health expenditure in India was borne by individuals privately (Balarajan, et al., 2011). Here, OOP expenditures shared a disproportionately large component of total expenditure on health. These were the direct payments made for consultations, diagnostic testing, medicines, etc., but did not include some of the indirect costs, such as loss of earnings due to illness. 80% of the total health expenditure, or 97% of private expenditure, was estimated to be borne through OOP payments (Planning Commission, 2006a).

Drugs constituted the largest share in OOP expenditure. The National Sample Survey (NSS) for 1999-2000 showed that the OOP expenditure spent on medicines was about 70% in urban and 77% in rural areas (Sakthivel, 2005). A household's affordability of health services was determined by its costs of treatment, its ability to manage these costs, and their impact on the livelihood (Gilson, Doherty, Loewenson, & Francis, 2007). The NSSO (2004–05) pointed out that an OOP expenditure of more than Rs. 3,000 was incurred during every hospitalization in rural government hospitals, while in rural private hospitals it was more than Rs. 7,000, as shown in Table-2.3. The expenditure in private hospitals in the urban areas was about three times higher than that in the public hospitals,

about Rs. 11,000 (Central Bureau of Health Intelligence, 2013c). Evidently, affordability continues to remain a matter of concern in India.

Table-2.3: Average Medical Expenditure (in INR) per Hospitalization Case

Type of Hospital	Rural		Urban	
	2004	**1995-96**	**2004**	**1995-96**
Government	3,238	2,080	3,877	2,195
Private	7,408	4,300	11,553	5,344
Others	5,695	3,202	8,851	3,921

Note. From "Health Finance Indicators-Table 4.2.5, 2013c," Central Bureau of Health Intelligence, Government of India)

Being primarily a state subject, health is essentially financed through state allocations although the centre does provide some assistance. However, it has been noticed that the allocations to health are generally affected by the state's overall fiscal constraints. Also, the states are seen to display a weakness towards using more of central funds at the cost of their own funds. Furthermore, any proposal to seek increases in the budgetary allocation to health is often questioned because the allocated budgets seldom got fully utilized. During 1990-2001, about 7% of the budget allocated to the health sector remained unutilized in Kerala, whereas in Tamil Nadu the expenditure exceeded the budget by about 6%. Clearly, health expenditure did not seem to fit any pattern (MoHFW, 2005). Whereas West Bengal was able to utilize only 56 per cent of the budgeted funds, the record of Punjab in this respect was merely 48 per cent, conspicuously indicating their low absorptive capacity (Hooda, 2013). In the case of NRHM the rate of utilization of funds in the initial years was slow, but later it did gain much momentum, although there was much that still remained to be done. Many causes, systemic and institutional, are ascribed to the low absorption of budgeted amounts, such as shortage of human resource, poor capacity in planning and execution, issues in the budgeting process, etc.

Besides the low level of spending in the health sector, it is also the pattern of allocation of public funds that affects the health outcomes (Breman & Shelton, 2001). It was observed that health services in India were under-financed and also biased towards urban areas, curative services, and modern medicines. Alternative systems of medicine like AYUSH continued to play only an insignificant role in the health service delivery (Baru et al., 2010). Studies suggested that states like Delhi, Andhra Pradesh and Tamil

Nadu spent more than half of all government expenditure on tertiary care, clearly pointing towards the biased trend (Reddy et al., 2011b). This has led to the service delivery being more urban-oriented, widening the rural-urban disparity in terms of the accessibility of health-care services, and re-emergence of some diseases and expanded health inequalities (Balarajan, et al., 2011; Ma & Sood, 2008).

The available literature presents a strong case for spending on public health. However, prodded by the inefficiencies in apportionments and private interests, the focus was seen as shifting from public health towards more individual care, and from preventive care towards curative treatment (Baru et al., 2010; Ma & Sood, 2008).

To add to the woes, the health insurance coverage in the country has been quite low. The concern for the low penetration of health insurance has often been commented upon (Rao et al., 2011; "Low health insurance coverage a matter of concern", 2010). As a result, the costs of medical care had to be largely financed by individuals and the households through OOP payments. More than 91% of India's workforce consists of workers, whether engaged in the unorganized sector (85%) or in informal employment in the organized sector (6%). This is the segment of population which is most vulnerable, and susceptible to get greatly affected by the catastrophic costs (Planning Commission, 2008; Reddy et al., 2011b).

Ma & Sood (2008), citing Mathur, commented that although the National Rural Health Mission in its supplemental strategies had proposed to support community-based health insurance schemes (CBHSs) by subsidizing premiums for the poor, India still did not have a clear agenda for developing the public or social insurance. Some nongovernmental organizations initiated a variety of CBHS experiments, but most of these depended on the external resources for financial sustainability (Ma & Sood, 2008). The absence of financial protection and the rising costs of treatment not only dissuaded people from accessing the much needed healthcare but also pushed them into poverty (Kumar et al., 2011). In an analysis of national data provided by NSSO-61st round, Shahrawat & Rao, (2012) pointed out that the high OOP expenditure affected 5% households with unfortunate consequences, including about 3.5% of the population descending into the below poverty line. Health insurance has thus emerged as an alternative to reduced OOP costs. The percentage penetration of health insurance at the national and state level is shown in Figure-2.4 (Reddy et al., 2011b). In 2010, about 25%

of the population across the country was covered by the public or private health insurance schemes.

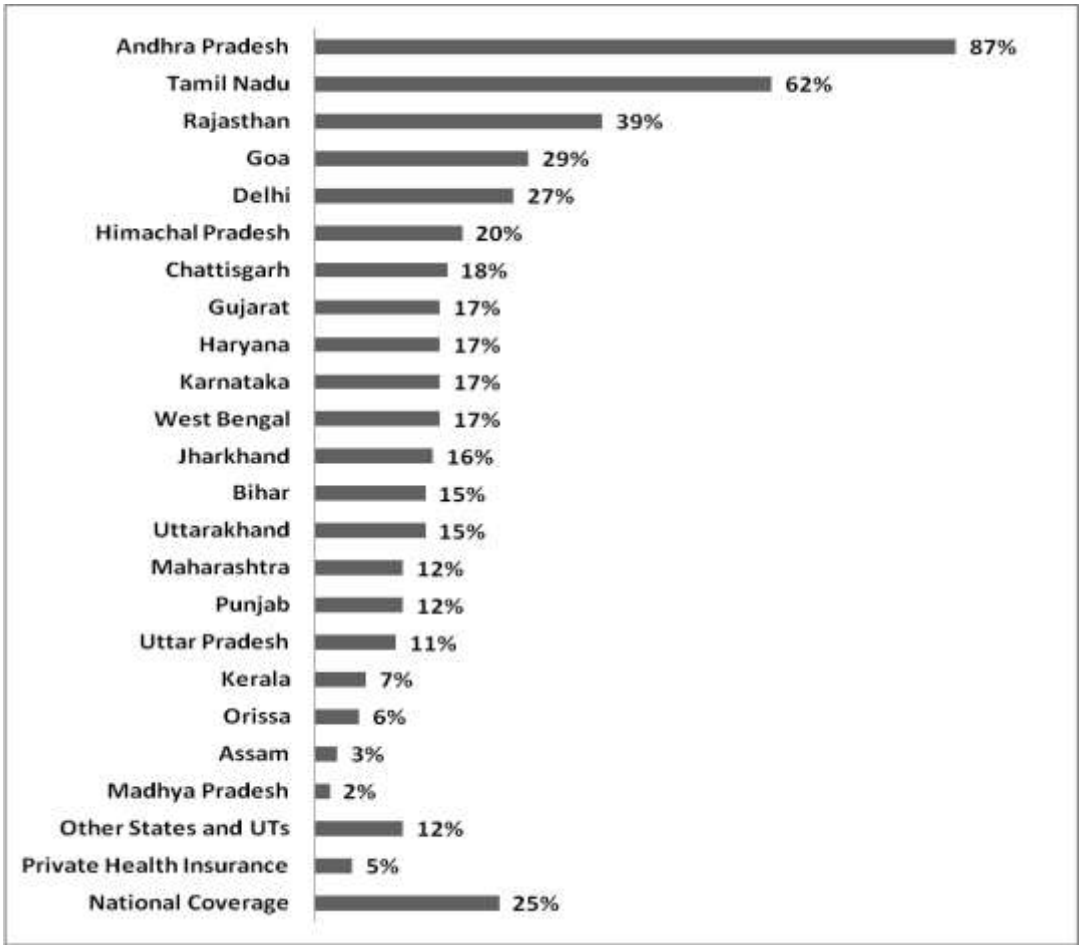

Figure-2.4: Percentage of National and State-wise Health Insurance coverage in 2010

Note. From "A Critical Assessment of the Existing Health Insurance Models in India,", by K.S. Reddy, S. Selvaraj, K.D. Rao, M. Chokshi, P. Kumar, V. Arora, S. Bhokare and I. Ganguly, 2011b, Public Health Foundation of India

In the context of health insurance, according to Reddy et al. (2011b), an issue that calls for scrutiny and control is the rise in the number of some surgical interventions amongst the insured population. Evidence suggests that under the RSBY, hospitalization rates at an all-India level was about 20 per thousand beneficiaries, though this was marked by extreme variations between states. According to NSSO, in Kerala there were 38 hospitalizations per thousand while in Assam it was as low as 1 per thousand, against the national average of 31 per thousand. Similarly, the voluntary private health insurance scheme reported a rate of 64 per thousand, which was almost double that of the national average. To maximize revenues, certain hospitals empanelled under the RSBY scheme,

performed many more hysterectomies than were demanded, or even combined together certain surgeries like hernia with appendectomy to claim additional charges for an enlarged treatment package. Data from Aarogyasri, a health insurance scheme run by the Andhra Pradesh government, reported similar observations (La Forgia & Nagpal, 2012). Undoubtedly, there is a rising trend in moral hazard, apathy and cynicism, and erosion of ethical values. Indulging in extra care beyond what is necessary, and substituting outpatient with inpatient services are indications that stricter controls are required. Left unabated these tend to create greater pressure on the tertiary care at the expense of primary care.

Wide variations in health indices are a manifestation of inconsistencies in the availability and functioning of health services in different parts of the country. India is passing through an exciting phase where ensuring of healthcare services, which are accessible to and affordable by all its citizens, has become a key area of focus. The challenge is immense as nearly 70% of the country's population lives in the rural areas and over 20% belongs to the stratum which is below the poverty level. While India lacks a robust infrastructure, it also suffers from several inherent systemic weaknesses. Recent appraisals by the government and non-government bodies have brought to light various disturbing issues, shortfalls and challenges which seem to cripple the Indian health system, particularly in the public sector.

The public and private sectors taken together are not yet adequate to take care of the health needs of the masses. In the first place, there are not enough facilities, and even among these not all are fully operational. In the absence of national guidelines for quality assurance, the service delivery at these centers is destined to suffer (Kumar et al., 2011; Ma & Sood, 2008; Maini, 2007). In 2005, the Supreme Court of India had directed the government facilities to enforce central government guidelines while conducting sterilization procedures. It introduced some norms for standardizing the procedures (MoHFW, 2013a). Of late, the government has introduced certain guidelines and manuals for quality improvement (MoHFW, 2013b). In this context, during the 11th Five Year Plan period, a number of pilot studies were taken up, the most notable of these being under the aegis of the National Health System Resource Center (NHSRC). Using the International Organization for Standardization (ISO) platform, in conjunction with the mandatory inclusion of other procedures specific to the Public Health, over 140 facilities, ranging from primary centers to district hospitals, were approved for certification while

another 388 were working towards achieving the same goal (National Health Systems Resource Centre [NHSRC], 2011-12).

At the time when NRHM was launched, one of its objectives was to make the facilities at every tier compliant with the IPHS standards. But, many studies have highlighted the gaps in this respect. Table-2.4 lists some of the deficiencies in the existing facilities. The study by Biswas and Ojha (2012) highlighted that none of the health centers in the Sheikhpura district in Patna (Bihar) adhered to the IPHS norms, whether in terms of human resource, infrastructure or services. Even the level of awareness regarding IPHS was found to be very low. Another study (Sodani & Sharma, 2014) assessed the 24×7 PHCs of Bharatpur district in the Rajasthan state. It pointed out that the human resource, infrastructure, and facilities for the newborn care services at these centers were not satisfactory when compared with the prescribed Indian Public Health Standards (IPHS). It was also noted that none of these 24×7 PHCs had a fully equipped newborn corner. In a study (Zaman & Laskar, 2010) to determine and compare the extent to which the IPHS were followed by the PHCs in the selected districts of the Empowered Action Group (EAG) state of Assam and the non-EAG state of Karnataka, it was observed that the medical termination of pregnancy (MTP) services, management of low-birth-weight babies, facility for tubectomy and vasectomy, facility for internal examination for gynecological condition, emergency services (24 hrs), primary management of fractures, surgery of cataracts, etc., were poor at the PHCs. According to the rural health statistics (Rural Health Statictics-2012), out of the total 24049 PHCs and 4833 CHCs, only 3635 and 742 of these respectively, were functioning as per the IPHS norms.

The poor condition of the infrastructure of centers has been much written about (Radwan, 2005). The capital expenditure in this respect accounted for a mere 5% of the total expenditure in public health (MoHFW, 2005). An infrastructure cannot be considered functional until all equipments, as required and in operating condition, are in place. A study by Sharma and Narang (2011) focused on user perceptions regarding the service quality. Inadequate availability of medical equipments was reported as one of the significant drawbacks at CHCs. An article in a leading newspaper highlighted the crippling of public system because of, *inter alia,* absence of basic requirements such as water, electricity and essential equipments (Varma, 2012). Citing a recent performance audit report by the Comptroller and Auditor General (CAG) on the implementation of the

NRHM, Benny George (2011) mentioned that out of the total 687 PHCs selected for the audit, 120 (17.5%) lacked adequate water supply and 93 (13.5%) did not have electricity.

Table-2.4: Some of the deficiencies in the available infrastructure

Indicators	% Deficiency
Sub Centers without ANM	1.3
PHCs without doctor	11.6
SCs without regular water supply	29.1
SCs without electric supply	25.9
SCs without all weather motorable roads	11.7
PHCs without regular electric supply	5.0
PHCs without regular water supply	7.5
PHCs without all-weather motorable roads	8.1
PHCs without telephone facility	52.6
PHCs without computer facility	54.9
SCs functioning as per IPHS norms	24.7
PHCs functioning as per IPHS norms	20.8
CHCs functioning as per IPHS norms	24.9

Note. From "Rural Health Statistics- Status of facilities available-Tables 35A, 35B, 36B, 36C, 37B," 2014b, MoHFW

Not just these centers, even the Government Medical Colleges and Hospitals often faced the ignominy of de-recognition mainly because they failed to adhere to the infrastructure, equipment, and staff norms, as laid down by the MCI (Planning Commission, 2008). Well intentioned plans mean nothing, if these are not supported by the required infrastructure. For example, most of the district hospitals have a post of dental surgeon but they lack the needed equipment, machinery, and materials. Even where the equipments are in place, the maintenance is poor with the result that the service delivery gets seriously affected (Planning Commission, 2008).

A document by NHSRC (n. d.) mentioned that the downtime for medical equipment and devices in the public facilities was quite high either because of poor monitoring and supervision and/or these were impacted by procedural issues. Many a time, users were left with no option but to go to other expensive clinics or diagnostic centers, which in principle defeated the very purpose of creating facilities to offer low cost services. Sadly, even when the equipments were functional, the quality of reporting was often poor and shoddy.

Poor monitoring system did not apply only to the status of equipments. It was identified as one of the primary reasons of inefficiency in the public system. Another

important aspect that needs to be looked into is the specific parameters that are being monitored. In the first place if the parameters do not relate to performance or success, monitoring is a pointless exercise. Studies have noted that the indicators, which were suggested in the results framework document (RFD) for evaluating the results, were neither appropriate nor were these ever reviewed or modified as required. Gupta and Nair (n. d.) suggested that the RFD, particularly with respect to Reproductive and Child Health (RCH) services, needed to be reviewed and redesigned. They explained, for example, that the RFD measured the number of FRUs/ 24x7 PHCs/ doctors trained in EMOC/ LSAS (Emergency Obstetric Care/ Life Saving Anaesthetic Skills) against the targets as key performance indicators (KPI), whereas the ground reality was that many of these facilities might not have been operational or might have had little caseload. In such cases, a more useful KPI ought to have been the average caseload per facility/service provider. Similarly, in viewing the success of Universal Immunization Program, in addition to the number of children fully immunized (where the data could be easily exaggerated by the states) as per the RFD, it should have also considered information on the vaccines consumed, wasted, and left in stock. In addition to inadequate monitoring and inappropriateness of the success indicators, the study by Gupta & Rani (2004) observed that the health profiles prepared by the MoHFW did not capture the data on important inputs e.g. environmental risks. Highlighting the inadequacies of the Health Information System, Ramani (2014) opined that the data was taken only from the public health facilities, and most of it was not even verified. Also, the registration of birth or death was incomplete and the data on compilation of morbidity and mortality was inadequate. MoHFW did not explain the implications of the report to key decision makers, or evaluate how the reports were used; even the suggestions given by the MoHFW's own evaluation unit towards improving data collection and measurement, did not receive the attention they deserved. The quality of information lacked credibility since the protocols for data collection were not periodically evaluated or audited (Gupta & Rani, 2004).

A patient satisfaction survey carried out in 25 public hospitals in Andhra Pradesh found that the highest concerns of patients included corruption among hospital staff, a lack of utilities such as water supply and fans, poor maintenance of toilets, a general lack of cleanliness, and poor communication and interpersonal skills (Mahapatra, Srilatha, & Sridhar, 2001).

A similar study by Balarajan et al. (2011) described deficiencies such as high absenteeism, limited working hours, poor quality of work environment, etc. As shown in Table-2.5, the findings of the National Health Family Survey (NHFS-3) (2005-06) highlighted the distribution of population in terms of their preference of facilities when they fell sick. It showed that mostly the private facilities were accessed in the rural as well as urban areas. The perceived poor quality or lack of trust in public facilities appeared to have contributed to the shift towards the private health providers (Bhandari, 2006).

Table-2.5: Percentage Distribution of Households by the Source of Healthcare - NFHS III (2005-06)

Source	Total	Rural	Urban
Private medical sector	64.8	62.5	69.5
Public medical Sector	34.4	36.8	29.6
NGO or trust hospital/clinic	0.4	0.3	0.5
Other source	0.2	0.2	0.2

Note. From "Health and Family Welfare Statistics in India- Tables E 26," 2013, p. 295 by Statistics Division, Ministry of Health and Family Welfare, New Delhi

The percentage of households that generally did not use government health facilities was about 65.6 per cent. Table-2.6 shows the reasons cited for low utilization of public facilities, the main reason being the poor quality of services provided at these facilities.

Table-2.6: Reasons for Low Utilization of Public Facilities - NFHS 3 (2005-06)

Reasons	%
Poor quality of care	57.7
No nearby facility	46.8
Waiting time too long	24.8
Facility timing not convenient	13.1
Health personnel often absent	9.2
Other reasons	3.9

Note. From "Health and Family Welfare Statistics in India- Tables E27," 2013, p. 296 by the Statistics Division, Ministry of Health and Family Welfare, New Delhi

Gill (2009) and Husain (2011) commented on the absence of toilet facilities and medical waste disposal system in many SCs, PHCs and CHCs. The general cleanliness at

PHCs and CHCs was noted as deplorable, despite there being a sufficient number of cleaning staff on the rolls. This laxity, according to Gill, could be explained by the fact that the regular or contractual cleaning jobs were being used as a patronizing tool by small-time decentralized functionaries, such as the Hospital Development Society members, to get the jobs cornered only for such people who were known to them.

The Infection Management and Environment Plan (IMEP) guidelines (MoHFW, 2007) provided a framework for managing waste at SCs, PHCs and CHCs, but not much of that was ever followed. Studies showed that the management of biomedical waste in healthcare settings was not uniform and there was much that needed to be done (Himabindu, Madhukar, & Udayashankara, 2015; Mohankumar, 2011).

There are several other disturbing issues. Patients often complained about the non-availability of drugs and their unaffordable prices. Citing WHO, the steering committee report on 'Essential Medicines to All', mentioned that approximately 68% of Indian population did not have access to medicines at affordable prices. The poor availability of essential medicines in public health facilities (PHFs) was characterized by acute shortages and chronic stock-outs (Gill, 2009; Husain, 2011; Kotwani, 2013; Planning Commission, 2010b; Planning Commission, 2011a; Radwan, 2005; Ramani, 2014). In states like Uttar Pradesh, bandages and basic medicines such as albendazole/ mabendazole tablets, cotrimoxazole syrup, etc., were found to be out of stock or in irregular supply (Gulati, Singh, Kumari, Raushan, & Kaur, 2009). Even vaccines were not always available, as required (Kumar & Gupta, 2012).

Not only the quantity of drugs but also their quality needed to be reviewed. Inspection of PHFs in some states revealed that the stocked medicines included those that were well past their expiry dates (Gill, 2009; Sharma & Narang, 2011).

The reason for many deficiencies in the system is poor enforcement of regulations, which in turn is the result of weak and inadequate drug control infrastructure at the state and central levels, and inadequate manpower (Kumar & Gupta, 2012). Drug regulation covers too many functions (Department-Related Parliamentary Standing Committee on Health and Family Welfare, 2012), such as licensing and monitoring of the manufacturing facilities and distribution channels, controlling of quality, periodically reviewing and re-evaluating the approved drugs, etc. Drug regulations in India have various shortcomings and inadequacies. In 2003, the Mashelkar committee (Ministry of Health and Family Welfare, 2003), which was set up to review drug regulations, observed

that the Drugs and Cosmetics Act had been in force since independence, but the level of enforcement in many states was far from satisfactory. In April 2008, the WHO criticized the Indian drug regulatory system for its various shortcomings like being non-rigorous, understaffed, and lacking autonomy. As per the steering committee report on essential medicines in 2011, one of the lacunae cited was the low priority assigned to the streamlining of drug and food regulatory machinery by the centre and states. It also made a mention of the multiplicity of jurisdictions relating to pharmaceutical production and regulation (Planning Commission, 2011c).

There is a pressing need to strengthen State Drugs Control Organizations (SDCOs). Only 17 out of the 31 States and Union Territories have their drug testing facilities (Kumar & Gupta, 2012); there are only 846 drugs inspectors in place against 1,349 sanctioned posts in states (Report of the 44th Meeting of The Drugs Consultative Committee, 2012). There is need for a strong Central Drugs Standard Control Organization, which is well-equipped, independent and professionally managed. Also, the very process adopted by the government's monitoring agency, National Pharmaceutical Pricing Authority (NPPA), to identify/monitor the drugs under price control, lacks perfection (Srinivasan & Khanna, n. d.).

India has a sizeable market for counterfeit medicines. According to a recent report, the country is the source of about one-third of the total counterfeit drugs trade in Asia (Business Monitor International, 2012).

In a limited survey covering Andhra Pradesh, Bihar, Rajasthan and Uttar Pradesh (Gill, 2009), it was discovered that even when the drugs were available, a majority of patients had to buy them at their own expense. The reasons highlighted were corruption or issues relating to the BPL entitlement cards.

Due to irrational prescriptions**,** an average of 63 percent of the money spent on prescribed drugs is a waste. In other words, nearly two-thirds of the money that is spent on drugs is wasted on unnecessary or irrational drugs (Policy Brief, n. d.). The steering committee (Planning Commission, 2011c), which was formed under the 12th Five Year Plan, identified this as one of the areas for scrutiny. This observation was also supported by some other studies and reports (Planning Commission, 2011a, Patel, Vaidya, Naik, & Borker, 2005).

Often, there were complaints about the drug kits supplied to ASHAs. Evaluation reports observed that the kits were not adequate and, at times, contained drugs that were

close to their expiry dates. Also, in many states the kits were not refilled as and when they fell due (Minutes of ASHA Mentoring Group Meeting, 2009). It is always the poor people who mostly get affected. On the one hand, they are the ones who are more vulnerable to frequently falling sick and, on the other hand, they also lack the financial strength to buy the drugs for cure. Ensuring the availability of essential drugs in every PHC and CHC would not only enhance people's confidence in the public health system, but also help to improve the utilization of public health facilities. During the 11th Five Year Plan it was emphasized that building an efficient and effective logistics system for the supply of drugs, vaccines and consumables, based on need and utilisation, would receive priority. While the component of drugs and medicines accounted for a mere 10% of the overall health budget of both the central and state governments (Gupta & Rani, 2004; Planning Commission, 2008; Planning Commission, 2011a), it included a much greater proportion of the out-of pocket expenditures (Balarajan et al., 2011; Kumar et al., 2011). Some other studies also highlighted the fact that provisions in the budgets were low (Planning Commission, 2011c; Radwan, 2005; Selvaraj et al., 2012). It was also pointed out that the expenditure on drugs increased with the passage of time. The reasons cited for inequitable access to affordable and good quality drugs, were inefficient control of drug prices, weak regulation of the pharmaceutical market, and poor procurement and distribution mechanisms.

The problem of logistics concerning drug distribution has been highlighted in several studies (Ramani, 2014). Manipulation, influence, corruption, etc., are widespread in many states. Poor logistical management leading to inappropriate or irregular supplies is also documented in the common review mission (National Rural Health Mission, 2012). A senior official was killed reportedly for attempting to stop corrupt practices (Jefferey et al., 2007). States like Tamil Nadu, Odisha, Andhra Pradesh, Rajasthan and Delhi have established their own corporations to manage their supply chains. The effectiveness of the Tamil Nadu Medical Services Corporation (TNMSC) has been much appreciated and there were talks of replicating the model.

Balarajan et al. (2011) cited Selvaraj & Nabar (2010) to highlight the significant decrease in the proportion of drugs under price control, from about 90% in the 1970s, to only about 10%. In fact, between 1996 and 2006, the prices went up considerably as under (Sengupta, Joseph, Modi, & Syam, 2008):

- selected group of drugs : 40%,
- drugs on the essentials list : 15%
- the rest of the drugs : 137%

Apart from the inadequacies in terms of equipments and facilities that affect the functioning of health centres, many other problems relate to the human resource employed in the government sector. Whereas the young, skilled doctors and paramedical workers lack the inclination to work for public institutions, the government also shows little interest or initiative in encouraging them to join the fold.

Several studies have highlighted the persistent shortages in healthcare workforce - doctors, nurses and allied health professionals (Balarajan et al., 2011; Husain, 2011; Ma & Sood, 2008; MoHFW, 2005; Raha, Berman, & Bhatnagar, 2009). The gravity of the situation can be imagined from the fact that the population-based human resource norms, set for India's health services by the Bhore Committee way back in 1946, are yet to be achieved even after seven decades. One of the major challenges for India, identified by the WHO in the country cooperation strategy (2012-2017) (WHO, 2011), is the insufficiency and mal-distribution of the available manpower. According to the WHO, the benchmark is 25.4 healthcare workers (physicians and nurses) per 10,000 of population. The situation in India is merely 11.9 healthcare workers. This data may not be very authentic as it has not been updated for long, yet it clearly establishes that the number of existing workforce is far less than what is prescribed. The doctor to nurse ratio has also been poor, especially in comparison to other countries with similar economies (Rao, Bhatnagar, & Berman, 2009a; Rao, Bhatnagar, & Berman, 2009b).

The shortfall in the number of doctors at PHCs in India in 2005 was 1004, while in 2012 it rose to 2489 (Government of India, n. d.a). According to government reports, in 2012, PHCs without any doctor were 903, without lab technicians 7676, without pharmacists 5549, and without a lady doctor 5438, while at CHCs the deficit in the number of specialists (surgeons, obstetricians & gynaecologists, and physicians & pediatricians) was 12301 (Government of India, n. d.b).

The proportion of female doctors in the system was quite low as well. They numbered about 7 per 10,000 of population, or 2 per 10,000 women. Also, women represented only 17% of all allopathic doctors, and 6% of allopathic doctors in the rural areas (Rao, Bhatnagar, & Berman, 2012). This dismal share of female doctors raises concerns about women's access to employment in healthcare.

The report titled “redefining health service delivery paradigm: from ‘paramedics’ to ‘allied health professionals’” (Public Health Foundation of India [PHFI], 2012) stated that there was a dearth of paramedical staff in India. Citing a study conducted by the PHFI and MoHFW, the report highlighted the huge gap of 6.5 million between demand and supply of trained paramedical staff. The shortage in human resource is further aggravated by its irrational and skewed distribution. Their distribution per 10, 000 of population varied from 15.8 in Chhattisgarh to 38.4 in Kerala. A majority of the allopathic and AYUSH doctors are concentrated in the urban areas. The distribution of allopathic doctors per 10, 000 people in the urban areas (13.3) is three times that in the rural areas (3.9), and similar is the situation in case of nurses and midwifes: the density in the urban areas (15·9) is more than that in the rural areas (4·1) (Rao, et al., 2009b). As reported in the RHS (2012), the vacancies at different levels of care at SCs and PHCs were 14084 of ANMs, 36635 of male health workers, 9373 of female health assistants /Lady Health Visitors (LHVs), and 7320 of male health assistants. Also, there were vacancies of 6493 medical officers at PHCs, and 4325 of specialists at CHCs.

Vacant posts are not confined only to rural centers but these exist in the urban centers as well. In 2014, in a tertiary care hospital like the All India Institute of Medical Sciences (AIIMS), 223 posts of doctors lay vacant. The reasons cited for these vacancies included attrition due to retirement, resignation or termination, and creation of yet-to-be filled new posts (MoHFW, 2014a).

To attract and retain health workers in under-served areas, states adopt different initiatives, including measures such as various financial and non-financial incentives (Rao et al., 2011; Sundararaman & Gupta, n. d.). In Tamil Nadu, doctors graduating from government medical colleges need to sign compulsory rural service bonds. States like Andhra Pradesh and Gujarat provide reservations or preference in postgraduate education to those who complete specified number of years of rural service. Other states like Haryana and West Bengal adopt location specific recruitment of candidates. Chhattisgarh introduced a 3-year rural health practitioner course to address the issue of manpower shortage, especially in difficult, under-served and rural areas (PHFI, NHSRC, & State Health Resource Center [SHRC], 2010a). Physicians trained in AYUSH are being recruited and provided short term training to augment service in such areas. This mainstreaming of AYUSH was also on the agenda of NRHM, though its implementation does raise many questions (Keshavamurthy, 2013; MoHFW, 2011a; Samal, 2013).

Some states tried contracting out public services. In Karnataka and Arunachal Pradesh, some of the primary health centers were contracted out to NGOs. While in Gujarat, services were purchased from private doctors to increase the institutional deliveries among the poor.

To resolve health workforce issues, it was suggested that the other cadres of health workers like nurses, paramedical staff, AYUSH practitioners, and multipurpose workers, needed to be seen as equally important in effective running of the health centers. For a functional primary healthcare system, one that can effectively provide basic health services to the masses, the availability and quality of health workers, other than doctors, needs to be strengthened. Measures such as building positive work environment, reducing social isolation, ensuring a system of scheduled transfers, are necessary to enhance the willingness of workers of all cadres to accept such postings (Rao et al., 2011).

About the public health cadre, it is essential to harness the available manpower in the field of community medicine and public health lest they feel demotivated because there are no clear career pathways. It is reported that this cadre is suffering from an 'identity crisis' (Sharma, 2013), and the problem requires urgent attention.

Absenteeism and brain drain are yet other issues that further aggravate the already existing problem of severe shortages. Numerous studies have commented on the issue of absenteeism among doctors (Balarajan et al., 2011; Bhandari & Dutta, 2007; Maureen, 2007; Radwan, 2005; Rao et al., 2011). It was observed that close to 67% doctors remained absent from duty (Sinha, 2012a). As per NFHS-3 (2005-06), the users identified the absenteeism of healthcare personnel as one of the reasons for not using the government healthcare facilities. Healthcare centers even with proper facilities become non-functional when there are no doctors to man them. Analyzing nationally representative samples, Chaudhury, Hammer, Kremer, Muralidharan, & Rogers (2006) found that the number of absenting health workers in India was the largest amongst all countries. Absenteeism was more in case of higher rank officials, and also more in case of men than women. The reasons attributed are a lack of basic infrastructure that leaves no motivation for the employed doctors to report for work, low incentives, engagement in private practice and poor administrative control. Further, since their absences do not follow any specific pattern, people are never too sure if doctors would be available when required, and hence, they choose not to visit the government healthcare facilities as far as possible.

Indian doctors regularly emigrate to developed countries for better gains. Indian medical graduates represent the largest number of foreign trained physicians in the USA and the UK, the second largest in Australia, and the third largest in Canada (Mullan, 2005). In the case of nurses also, those of Indian origin working abroad is quite high. Evidence shows that migration is more from the publicly funded medical institutes (Raha, Berman, & Bhatnagar, 2009). Institutes like AIIMS spend about 8-10 million rupees to train a doctor (MoHFW, 2014b). It is noted that emigration is disproportionately higher from such premier institutes; for example, emigration of doctors from AIIMS during the period 1989-2000 was as high as 54% (Kaushik, Jaiswal, Shah, & Mahal, 2008). This has important implications on the resource constrained public health system as well as on the availability of quality physicians and nurses in India.

In the absence of doctors, people are left at the mercy of the informal/rural medical practitioners (RMPs). Rao et al. (2009b) noted that allopathic doctors in the rural and urban areas, who had no medical training, accounted for 42% and 15%, respectively. These individuals neither have any professional qualification or training, nor do they have a license to practise medicine. And yet, the RMPs engaged in providing primary care, mostly in the rural and some in the urban areas, constitute the largest proportion of medical professionals in terms of numbers and spread (Narayana, 2006). In a policy note by Radwan (2005), the countrywide estimates of informal healthcare providers varied widely from 0.5 to 1.27 million. It is baffling to note how, without any formal education or training in the field, the RMPs enjoy the people's trust and are able to earn a comfortable living from consultation fees or commissions for referrals to private hospitals. It is also noted that in the absence of any credible care in the rural and semi urban areas, often RMPs are the people's first point of contact for care. Reasons cited for their thriving practice are their flexible working hours, easy availability, and being peripatetic. In a study conducted in two states (Andhra Pradesh and Odisha), it was found that approximately 70% respondents in Andhra Pradesh accessed non-degree allopathic practitioners (NDAPs) in or near their villages, while in Odisha, 40% chose NDAPs and 36% consulted traditional healers. In Andhra Pradesh, all NDAPs were private practitioners but, in Odisha, NDAPs also consisted of some moonlighting pharmacists and nurses. Reasons provided for the prevalence of such a practice are their proximity and readiness to make house-calls whenever required (Gautham, Binnendijk, Koren, & Dror, 2011).

The fallout of the severe shortage of workforce is the overburdening of staff at the workplaces, be they doctors, specialists or paramedics (PHFI, 2012; Radwan, 2005). A study conducted in Chhattisgarh made an observation that a majority of the respondents claimed work overload. Administrative issues aside, it was upsetting for the persons who were required to work at such understaffed centers. It also affected the quality of care (PHFI, NHSRC, & SHRC, 2010b). Another study noted that even the Anganwadi workers faced the problem of excessive workload. Their job, besides routine activities, includes maintaining of too many record files (Madhavi & Singh, n. d.). The situation further worsens when, added to the extra workload, employees at certain levels are also required to carry out administrative tasks for which they have no prior training. Involving doctors in administrative duties diverts their attention from their primary task of treating patients. It affects their own performance as also the quality of services they provide. Studies suggest the need for a separate cadre to take care of the managerial work at the centers (Planning Commission, 2011a).

Despite all the emphasis laid by the Bhore committee and other committees, not much effort was ever made in the direction of public health education. As noted in a study (Datta, 2009), unlike seats provided in medical colleges for post-doctoral degrees like Doctor of Medicine/ Master of Chirurgical (DM/MCh), there is no provision for similar super specialty courses relating to public health. Preventive and social medicine (PSM) is the only public health subject included in the curriculum for undergraduate students in medical colleges. Of the total seats for postgraduate education in medical colleges/ institutes, only 4% are earmarked for PSM and/or community health administration courses. PSM departments in medical colleges face many challenges, such as inadequate facilities, poor quality of staff, and low prestige (Rao et al., 2011).

The overall medical curricula and the pattern of teaching are not of any great quality, and the view of even the government is that the doctors are not getting trained to provide primary care services (MoHFW, 2006; National Knowledge Commission, 2007). Unwittingly, this establishes a case for teaching medical students with a public health perspective.

The public health institutes and related disciplines were established in India during the British colonial period. The School of Tropical Medicine (established in 1922) and the All India Institute of Hygiene and Public Health (established in 1932) were the earliest such institutions. Later, a few other schools such as those listed below came into

existence, offering degree/ diploma courses in public health and allied areas. However, only 5% of all courses run by them are in the area of public health.

- National Institute of Health and Family Welfare (NIHFW)
- National Institute of Communicable Diseases (NICD)
- Indian Institute of Health Management and Research (IIHMR)
- Tata Institute of Social Sciences (TISS), Mumbai
- Manipal Academy of Health Education
- Public Health Foundation of India (PHFI) and a few others.

With not enough institutes imparting public health education, there are not many qualified people in this field. Also, there being no defined career pathways for people with public health background, students shy away from pursuing a career in this area. With only a few students showing interest in this field, institutes do not find it financially viable to run such courses. A study conducted by Gupta & Rani (2004) found that only a few health officials agreed to the fact that the MoHFW truly encouraged academic institutions to develop and offer basic public health curricula, suiting different categories of health staff. Under these circumstances, the first thing that the government needs do is to chart out career pathways for qualified public health specialists, paving the way for all things else to take care of themselves. That would translate into many takers for public health programmes, ensuring financial viability of institutes who offered such programmes, and in the long run meeting much of the nation's requirements of specialists in public health.

The health system is also affected by other human resource issues, such as the process of recruitment, widespread corruption, ineffective training and development of manpower, poor appraisal systems, etc.

Problems relating to recruitment in the government health sector are mentioned in several studies (Rao et al., 2011; Raha, Berman, & Rao, 2009). Procedural delays in the government sector remain a matter of concern. At a time when the system is suffering from significant shortage in human resource and the government is struggling to position its staff at the healthcare centers, delays in the recruitment process simply add to the woes in the system. Studies show that the number of people who actually join the services in the public health sector are significantly lower vis-à-vis the number of vacancies advertised (Raha, Berman, & Rao, 2009). The limitations of successful recruitment in the government sector are many. Some are institutional issues, some related to organizational

procedures such as problems in co-ordination between the health department and the public service commission, and some others to the employment packages which are viewed as not attractive enough. Institutional issues, such as the time gap between the advertising of vacancies and issuing of offer letters, in some cases, as protracted as eighteen months, leave the applicants so disenchanted with the system that they no longer remain interested in taking up the jobs.

The influence of corruption is pervasive and persistent in the health sector (Maureen, 2007). A lack of transparency in recruitments, postings, transfers, etc., effectively demoralizes the employees. Often, it is political intervention or bribe that influences decisions. Nepotism/ favoritism in selection of candidates for training or promotion is widely prevalent. While remaining employed at health centers, doctors engage themselves in private practice. They continue this abhorrent practice and escape punishment simply by bribing superiors. In a study conducted in six states namely, Tamil Nadu, Maharashtra, Himachal Pradesh, Madhya Pradesh, Uttar Pradesh and Odisha, it was observed that in all states, except Himachal Pradesh, government employees were found to be involved in private practice (Sathyamala et al., 2012). It was noticed that healthcare workers (mostly doctors), who were absent from their places of work, were busy in private medical practice (Bhandari & Dutta, 2007; Radwan, 2005; World Bank, 2006). This is symptomatic of a system that lacks administrative zeal, accountability, or fear of punitive action. Other areas where corruption has come to light, *inter alia*, are admissions in colleges, functioning of the regulatory bodies like the MCI, collusion between pharmaceutical companies, diagnostic centers, and doctors, etc. (Chattopadhyay, 2008; National Knowledge Commission, 2007; "Ramadoss Accuses Medical Council of Corruption", 2005; Sharma, 2001).

Cynicism and the lack of accountability in the system are some of the causes of absenteeism, unethical practices, corruption, apathy, and a lack of interest in community participation. Failure in the delivery of public healthcare services is the result of poor accountability within the institutional framework. Users, the local communities and Panchayat members feel helpless in such a situation (Planning Commission, 2008; Radwan, 2005). While the need for an effective grievance redressal system is mentioned in various reports, it is also believed that an active involvement and supervision by the community, Gram Panchayats and civil society could be of help to reinstate

accountability and responsiveness (Bhandari & Dutta, 2007; Planning Commission, n.d.a; Planning Commission, 2012; Silan, Kant, Archana, Misra, & Rizwan, 2014).

Consequent upon the introduction of the 73rd and 74th amendments in the constitution, the third tier in governance, called a local government system, was introduced. In 1992, a constitutional status was given to the Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs). It did seem like a step towards increasing the accountability by enhancing community participation in the planning and implementation of schemes. However, these amendments got implemented only in letter and not in spirit, defeating the very purpose why these were conceived. While the objective was to devolve functional autonomy, administrative support and financial resources to the PRIs and ULBs, nothing worthwhile was accomplished (Department of Drinking Water Supply, n. d.; Planning Commission, 2010a; Rao, 2013; Tandon, 2012). There are government publications which highlight issues like first devolving powers and later withdrawing them, not integrating them fully, or not delegating the responsibilities of planning and implementation (Kaur, Prinja, Singh, & Kumar, 2012; Planning Commission, 2001; Planning Commission, n. d.b).

Kaur et al. (2012) emphasized the positive impact of decentralization on the delivery of healthcare services. They described the improvements brought about by decentralization in the public healthcare system in Haryana, and also pointed out that there still remained much to be done to further work towards capacity building of local bodies. Georgio Brosio, in the paper titled 'Decentralization and Public Service Delivery in Asia' (2014), highlighted the fact that the improvement in the outcomes in service delivery did not depend upon the intensity of decentralization but rather its quality, that is, the capacity to promote local accountability. Interestingly, the 12th Five Year Plan has stressed on the 'Principle of Subsidiarity', which means to convey that matters are to be handled by the smallest, lowest or least centralized competent authority.

Wherever the PRI's are actively involved, some positive and noticeable changes can be seen in the implementation of health schemes. A study conducted in two districts of Gujarat (Visaria & Bhat, 2011) show that some affirmative changes were brought about by the PRIs, e.g. changes in the ability of women to get elected to the local bodies, ensuring immunization and reproductive health services, organizing health camps and mobilizing women to utilize healthcare services, etc. However, there is much that still remains to be done, e.g. integration of Panchayats with the health departments,

decentralization in terms of delegating members with power and authority, training of members, etc.

Radwan (2005), citing a report of the 'Probe Qualitative Research Team' titled "Perceptions of public and private healthcare in Andhra Pradesh", described how people often complained about the rude and indifferent behavior of hospital staff who continued to get paid regardless of their performance. The permanency of jobs in the public system allows doctors to get away with their callous attitude, indiscipline, non-performance, and indulgence in unethical transactions. Absence of accountability is not just limited to service providers. It can be seen all across the administrative and political class in the country. Even the private sector is not much different where a lack of accountability stems from weak regulations.

Government organizations seldom provide any incentive to perform. There is no system to distinguish between the better and worse performers. A report identified the recognition of one's work by superiors and good employment benefit, were factors that mattered most to employees in the public sector organizations (Peters, Chakraborty, Mahapatra, & Steinhardt, 2010). Other factors contributing to job satisfaction and rated higher than salary were, career development, work environment, employment benefits, etc. (Kumar, Khan, Inder, & Mehra, 2014; Peters et al., 2010). An unfair and opaque system of personnel appraisal demotivated employees in the public sector. There also were other factors like the non-availability of drugs or diagnostic facilities at health facilities, corruption, etc., that demotivated and lowered the morale of employees in the government system (Bhandari & Dutta, 2007; MoHFW, 2005; Planning Commission, 2008). Even the educators lacked motivation to perform efficiently. A dedicated and motivated workforce is one of the most important building blocks of a health system.

Limited opportunities for training and development were identified as one of the reasons for the poor status of health system in the public sector (NRHM, 2012). Skill development and continuing medical education (CME) are important for constantly improving the effectiveness of the system. There exist provisions for training in various areas like sterilization, emergency obstetric care, programme management, associated refresher courses, etc. The NRHM working group constituted for the 12th Five Year Plan (Planning Commission, 2011b) highlighted the fact that with the limited availability of doctors the states could not possibly conduct as many programmes as were desirable. Other problem areas relating to training were its quality and post training follow up.

Given the shortage of staff, quite often officials found it difficult to release participants for programs on training. Other gaps which were identified, included improper selection of trainees, a lack of professionally managed training institutions, and trainer teams. Generally, the healthcare workers who were most involved in the delivery of services got to go for training last, and those who were less likely to get immediately involved in services were picked up first. The institutional capacity for training and development was also inadequate in the states. Training institutes like the State Institutes of Health and Family Welfare (SIHFWs), Regional and District training institutions, needed to be strengthened. SIFHWs did not have a set faculty structure or adequate manpower, nor did these have requisite collaborations with medical colleges or state health resource centers (National Institute of Health and Family Welfare, 2009). The kind of importance given to 'training' can be easily judged by the fact that the states do not have forward plans for training or post training evaluation or deployment. Programs for capacity building are seen as too theoretical in nature and lack practical orientation towards problem solving, planning, etc.

Studies show that the CMEs conducted were mostly targeted towards new developments and latest technologies, rather than tailored to suit the needs of doctors practising in rural centers (Vallikunnu, Kumar, Sarkar, Kar, & Harichandrakumar, 2014). The quality of doctors produced by academic institutions is also suspect, perhaps as a result of the rapid mushrooming of private colleges and unrecognized or unregistered medical/dental/nursing colleges. Unregulated commercialization of medical and paramedical education has adversely impacted on the quality and costs of education (Baru et al., 2010; Wattal, 2010). Weak regulatory and legislative environment in the country has a crippling effect on the health system and the society as a whole.

The MCI, DCI, Indian Nurse Council (INC), etc., are known to have granted approvals to some substandard/undeserving colleges to set up campuses. Lacking in basic infrastructure and facilities, faculties, etc., these colleges are incapable of providing quality education or training to medical or paramedical students or staff, or preparing them for the future. Rao et al. (2011) cited the report 'Task force for Planning on Human Resources in Health Sector-Planning Commission" (2006) to comment that many medical colleges were allowed to be set up under political pressure, despite grossly inadequate facilities, an acute shortage of faculty, and poor-quality training.

Some of the deficiencies of the education system are poor infrastructure, inadequate OPD, not enough teachers, poor hostel accommodations, variances with the MCI norms, etc. In Andhra Pradesh more than 700 Bachelor of Medicine and Bachelor of Surgery (MBBS) seats were cancelled on account of the failure of medical colleges to meet the MCI norms. Similarly, in Uttar Pradesh, an earlier approval to increase the number of seats was withdrawn by the MCI because of such lapses as shortage of teachers, gaps in infrastructure, and failure to meet the standards of patient care (Kanwar, 2014; "MCI denies UP medical colleges more seats", 2014; "Medical seat crunch haunts Bengal ahead of Medical Council of India meet", 2014; "MGM Medical College and Hospital reels under water crisis", 2014; Rana, 2014). In 2013, the teaching posts that remained vacant in premier institutes, like the AIIMS-Delhi and PGIMER-Chandigarh, were 329 and 125, respectively (MoHFW, 2013c).

Medical graduates passing out of some private institutions show little inclination to join healthcare services. Maternal and child diseases and infectious diseases were two areas which required deeper knowledge (Richards, 1985). Some freshly graduated doctors felt that despite a year of internship they could not gather enough confidence to treat patients, all by themselves.

Medical education has become too costly to bear for anyone with ordinary means. At private (non-faith based) medical schools, the costs have skyrocketed. For a medical degree, the fee for tuition alone is about INR 4 million (about US$60,000) at one of the country's premier medical colleges ("Kasturba Medical College", n. d.). The private institutions usually demand substantial donations in addition to the regular tuition fees. The cost of under-graduate medical education range upwards of Indian Rupees (INR) 3-3.5 million, while that for a postgraduate degree could be anywhere between INR 7-15 million, depending upon the type of specialty (Gandhi, 2012). By contrast, education in government colleges is largely subsidized, roughly costing only about INR 3000 (about US$50) tuition fees for the same degree ("Fees and Expenses", n. d.). Students paying huge fees for a degree at private colleges, understandably, are hesitant to join government services. This again adds to the problem of shortage of doctors at the public healthcare facilities.

As recognized by several authors (Bhandari, 2006; Chakrabarti, 2011; Dasgupta & Deb, 2008; Nundy, 2005; Planning Commission, 2011b), some of the more contemporary issues that need the attention of policymakers are urban health, disaster preparedness and

management, emerging areas like telemedicine, types of NGOs working in health and related areas, research towards improving therapeutics, etc.

In India, approximately 30% of the population lives in urban areas. The urban population went up from 286 million to 377 million during the period 2001 to 2011. According to the United Nations projections, if this growth continues at the same rate, the urban population would comprise 46% of the total population by 2030. Again, as per 2001 census, 42.6 million people lived in urban slums spread over 640 towns and cities. Demographers referred to the growing pattern as the 2-3-4-5 syndrome, i.e., in the last decade, India grew at an average growth rate of 2%, urban India grew at 3%, mega cities at 4% and slum population increased by 5% (Indian Council of Medical Research, 2007). Population projections suggest that the growth in slums is likely to exceed the capacity of the public authorities to respond to their health and infrastructure needs (Planning Commission, 2008). Although, the Jawaharlal Nehru Urban Renewal Mission (JNURM), launched in 2005 for the planned development of identified cities, was to provide basic amenities to the urban poor, the health issues of urban population, more specifically the urban poor, did not receive much attention until recently, when the government launched the NUHM, the urban counterpart of the NRHM.

The high population density in slums, poor housing conditions, a lack of water and sanitation, exposure to heat and cold, air and water pollution, and occupational hazards not only add to the environmental risks for the poor but also lead to rapid spread of infections. These are a vulnerable segment of the urban population as they do not have backup savings, food stocks, or safety nets by way of social support systems, to tide over any crises during illness. These settlements show high incidence of vector-borne diseases like tuberculosis, malaria, etc. Also, despite the presence of many private and government hospitals in the urban areas, a large percentage of the homeless and those living in slums or temporary settlements, do not have access to any formal healthcare system. All this together with miserable living conditions, a lack of resources, social exclusion, etc., make the urban poor more susceptible to ill-health than their rural counterpart. Thus, even though there is a concentration of healthcare facilities in the urban areas, the urban poor does not get access to these and whatever initiatives the country has taken so far is too little and too fragmented (Planning Commission, 2008). As per the NFHS III (2005-06) data, U5MR among the urban poor was 72.7 per 10,000 live births, which was considerably higher than the urban average of 51.9. Also, more than 46% of the urban

poor children were underweight and almost 60% of them missed total immunization before completing one year of life.

The responsibility of dealing with disasters rests with the governments. The likely loss of life and property due to disasters could be mitigated through effective policies and their implementation. Gaps were observed in the training received by health workers in emergency preparedness and disaster management, particularly on important issues like maintenance of food safety and environmental health after disasters, rapid evaluation of needs, dissemination of health information, and ensuring of transparency and efficiency in the administration of aid after disasters (Gupta & Rani, 2004; Kaur, 2006). Other identified gaps included, poor coordination leading to slow responses, lack of early-warning systems, inadequate search and rescue facilities, poor community empowerment, and limited/no coverage of the 'components on emergency preparedness and disaster management' in the curricula at academic institutions. The usual practice is to mobilize resources to respond to emergencies, rather than routinely develop competencies for anticipating emergencies and building the capacity for early responses. The poor state of disaster management was also highlighted by the CAG (Government of Uttarakhand, 2010). In a performance audit it discovered that a disaster-prone state like Uttarakhand was yet to frame its guidelines in accordance with the NDM (National Disaster Management) act and that the state disaster management authority was almost defunct. An absence of critical infrastructure, deplorable monitoring system, gaps in communication, and poor commitment of the government were identified as the major reasons of its lackadaisical approach. It was also reported that the national executive committee of the Prime Minister-led NDM Authority had not met even once between 2008 and 2012 (Bhalla & Bagga, 2013). The report identified the need for a greater focus on disaster response and relief, and increased attention on reducing risks. Gaps were also identified between the policy, design and delivery of training, and programmes on capacity building with respect to reducing the risks of disasters in India (Seeds Technical, 2013).

In today's context, there is a need to explore the emerging areas like telemedicine, medical transcription, etc. (Dasgupta & Deb, 2008; Mishra, Singh, & Chand, 2012). Telemedicine is in its nascent stage in India; barring a few cases, not many initiatives have been taken by the government to develop it.

The government recognizes the role the NGOs could play in disease surveillance and control, and in the delivery and support of government health programs (Radwan, 2005). However, the constraint in building partnerships with these organizations was that there was no database or comprehensive documentation which could help identify or assess the role and spread of NGOs in the area of health (Nundy, 2005).

Even as the country is endeavouring to cope with the problems of maternal and infant mortality, there always are newer challenges to contend with. Re-emerging diseases, accidents, injuries, mental health problems and non-communicable diseases pose fresh challenges. There are instances where the causative agent behind disease outbreaks are difficult to diagnose ("54 Died Due to Mysterious Disease in Bihar: Minister", 2011). In the wake of the epidemiological and demographic transition, there is a need to strengthen the research environment by establishing research centers which specialized in matters relating to the different types of communicable, infectious diseases, etc. The absence of good quality research to make evidence-based policy was cited as one of the reasons for poor goal setting and designing of programmes in health (MoHFW, 2005). Research in India, as noted by the working group of the Planning Commission (Department of Health Research, n. d.), lacks adequate manpower, infrastructure, funding/priority, regulations, industry-academic co-ordination, and translational mechanisms. A number of studies have identified the lacunae in health related research (Dandona, Raban, Guggilla, Bhatnagar, & Dandona, 2009; Kumar & Gupta, 2012). In relation to the disease burden generated by the non-communicable diseases, the research in this area is too little. Other neglected areas include health policy and systems research.

It can be inferred from the above analysis that healthcare services in India suffer from glaring deficiencies in terms of service outreach, infrastructure, resources and funds.

Researchers have offered several suggestions towards rectifying, modifying or improving the health services in the public sector. A report by the high level expert committee, constituted by the Planning Commission of India in October 2010 (Planning Commission, 2011a), elaborated on the areas that needed improvement, ahead of rolling out the ambitious universal health coverage (UHC). The committee analyzed the existing system and developed specific recommendations in six critical areas that were essential to augment the capacity of India's health system. These findings were as much applicable to an overall systemic improvement of the health system as to the UHC. The areas identified were:

- health financing and financial protection
- health service norms
- human resources for health
- community participation and citizen engagement
- access to medicines, vaccines and technology, and
- management and institutional reforms.

The combined expenditure on health from the centre and states was required to increase to at least 3% of GDP by 2022. One of the most notable suggestions was to have tax based public financing of the system i.e. using general taxation as the principal source of healthcare financing – complemented by additional mandatory deductions for healthcare from salaried individuals and tax payers, either as a proportion of taxable income or as a proportion of salary. To ensure universal access to essential medicines it was necessary to increase the public procurement of medicines from around 0.1% to 0.5% of GDP. Together with that, contracting-in of private chemists was recommended to ensure distribution and availability of quality medicines across the country.

To improve the managerial efficiency, it was proposed that all such activities were to be assigned to people who had a formal background in public health. It recognized the need to develop and put in place a public health cadre in the states. It also suggested that the professional education in health needed to be directed towards population-based primary and preventive healthcare, instead of it being driven by curative-treatment. The committee observed that around 149 districts in 14 high focus states did not have a nursing school/college in the year 2009. It recommended establishing of new colleges to strengthen the nursing cadre, especially in the under-served areas.

The scenario was the same in the case of medical schools. The unequal availability and skewed production of doctors was attributed to unequal distribution of medical colleges. A review of the distribution of medical colleges showed that high focus states and those with more population had fewer colleges when compared to non-high focus and better performing states. Besides education, it was also important to invest in research and innovation in health sciences.

To ensure that the health system was more accountable and responsive to the needs of citizens, it was recommended that the participation by the community had to be increased. Strengthening of the roles of civil society and non-governmental organizations, together with the devolving of powers and finances to PRIs, were important for enhancing

citizen engagement. Further, to empower the users of the health system, it was essential that a systematic and responsive grievance redressal and information mechanism was introduced. To address the critical issue of access to drugs, vaccines and technology, it was necessary to enforce price controls/regulation (especially on essential drugs), revise and expand the essential drugs list, and ensure rational use of drugs. It was believed that the public sector could play a crucial role in building an adequate national capacity to produce and supply essential drugs at affordable prices.

It was necessary to initiate institutional reforms like establishing a National Health Regulatory and Development Authority (NHRDA), which would be made responsible for developing the legal, financial, and regulatory norms as well as a Management Information System (MIS) for the UHC. It was also suggested that a Health System Evaluation Unit (HSEU) be created, which would independently evaluate the performance of both public and private providers of health services across all levels. Creation of a National Health Promotion and Protection Trust (NHPPT) was proposed to facilitate promotion of a 'culture for better health'.

The main focus areas, identified by the WHO (2011) in the country cooperation strategy for India, were:

- implementing international health regulations
- strengthening the pharmaceutical sector (majorly, the drug regulation)
- improving the stewardship of the health services
- promoting access to and utilization of affordable, efficient, quality services by the entire population
- ensuring financial protection
- augmenting the health of mother and child, and
- addressing morbidity and new epidemiological reality.

In another report (Balabanova et al., 2013), the authors compared the performance of a few countries which had over a period of time achieved substantial improvements in health relative to their neighbours. This was in continuation of the study carried out in the year 1985 to identify the reasons why some countries achieved better health and social outcomes than others with similar income levels. Tamil Nadu, an Indian state was also included in the study. It discovered the following attributes linked to improvements in health and healthcare:

- good governance
- political commitment
- effective bureaucracies and institutions
- ability to innovate and adapt to resource limitations, and
- health system resilience.

It was concluded that no single attribute could be credited for the success achieved. The health system, which could adapt to population needs and respond to them, even at times of political unrest, economic crises and natural disasters, was able to achieve good outcomes. It pointed out that non-health factors like women's empowerment, transport infrastructure and education were equally important. Elements of good governance included effective leadership, especially at the district level, as it was critical for local adaptation of strategies. Greater accountability was helpful in efficient utilization of the scarce resources and building of trust in the system, indirectly increasing access to and demand from people. It also helped in tackling corruption.

Together with the capacity to innovate, the continuity of reform - even with changes in political scenario - was observed to be important in all countries included in the study. For successful reforms, effective bureaucracies and institutions were deemed as important. Other attributes were effective institutions with strong regulatory and managerial capacity, stable bureaucracy, sufficient autonomy and flexibility to manage the system, willingness to involve several stakeholders, synergy between health and non-health actors, governments and donors, and the ability to generate information and evidence, and effective use of media to bring about the change.

The study showed that despite low income levels, it was possible to achieve health improvements, provided the attributes mentioned above were adequately factored in. It was concluded that to strengthen the health system, one needed to think beyond mechanistic implementation of a series of interventions and formal policy fulfilment.

In India, various reforms undertaken in the health sector in the recent past had aimed at strengthening the delivery of health services to the masses (Government of India, 2004). Health reforms emerged as a major policy issue in the last two decades. Describing them briefly, these were categorized under three main heads. First, it was the changes in the financing methods by way of introducing user charges, stimulating private sector growth, and changes in insurance and community financing schemes. The second

reform was the organization of the health system and its management, which included decentralized planning, contracting out services and introducing a public-private mix. The third reform related to the changes in the public sector per se. It comprised downsizing, introducing competition, increasing the geographic coverage of services and improving the productivity.

Bhandari (2006), in his study, summarized that social infrastructure in the country played an important role as it represented the human face of economic prosperity. Health and education, taken together as critical components of social infrastructure, required greater decentralization within the government, increased involvement of consumers through e-governance/ sample surveys, enhanced engagement of local governments and professional associations in the decision making processes, and a greater emphasis on public-private partnerships (PPP). The report identified poor delivery of services as a symptom of a weak institutional set-up, and concluded that a functional infrastructure, together with a system for redressal of consumer complaints, was essential. The Planning Commission (Sinha, 2012b) suggested how PPP could be used for financial flexibility in case of health centers and even medical colleges. Regrettably, this suggestion did not find favour with health activists (Krishnan, 2012).

The public delivery mechanism needs to be strengthened and not replaced by private players. It was pointed out that neither of these should be allowed to flourish at the cost of the other (Sethi & Sinha, 2012). The private sector was welcome into the picture only for filling critical gaps in healthcare services. This viewpoint was also endorsed by the Nobel Laureate Prof Amartya Sen (Chakraborty, 2013).

Installing of a robust IT architecture is a sine qua non for improving the healthcare services. Tamil Nadu presents a success story with its IT-enabled model for effective drugs procurement and distribution. It has been widely acclaimed as it had helped to ensure the much needed transparency, prevent misuse, and ensure stringent quality control to keep out spurious drugs. It proved that the key was to invest in e-governance built around a robust IT infrastructure (Shaw, 2012).

While the government has launched several programmes for the benefit of the public, especially the underprivileged, it is necessary that the users are informed about these so that on the one hand, the demand for such services could increase and on the other hand, they feel empowered to question the providers in case of complaints. Studies have shown that beneficiaries were not quite aware of their entitlements at the health

facilities in the government sector. A study conducted by the Institute of Social Sciences, a research organization working on contemporary social challenges, found that among the 400 elected women Panchayat members surveyed across 19 states, only half of them had heard of NRHM, and even they were not aware of the nature of services available under the mission. Furthermore, 45 % respondents did not know anything about the standing committee on health, sanitation and nutrition in their Panchayats (Tandon, 2012). An evaluation study of the information, education and communication (IEC) activities, under Rajiv Gandhi Drinking Water and Sanitation programme, found that only an abysmally low percentage of habitations were aware of the activities, and the use of interpersonal communication for IEC under the programme was reported to be as low as 7% (Planning Commission, 2010a).

Another study conducted on RSBY (Trivedi & Saxena, 2013) highlighted the ineffectiveness of IEC and stressed the urgent need to improve the same. An evaluation study of tuberculosis program noted that the responses of different socio-cultural segments of the population varied in terms of their appreciation of IEC messages related to the program and, as a result, the stigma associated with tuberculosis had not been wiped off despite all campaigns (Sharma, Nath, Taneja, & Ingle, 2009).

Given the context described in detail in this chapter, it may well be concluded that the public healthcare system is indeed in crisis. The causes of poor performance of the healthcare sector as identified here are listed in the Ishikawa diagram presented in Figure-2.5.

Beset with various ills, the public healthcare sector requires strengthening of the system. An understanding of the problems and issues plaguing the health system, as discussed by various researchers, authors and organizations, provide the basis for the present research. The chapters that follow elaborate the design, tools and techniques, analysis, evaluation and the outputs of the study.

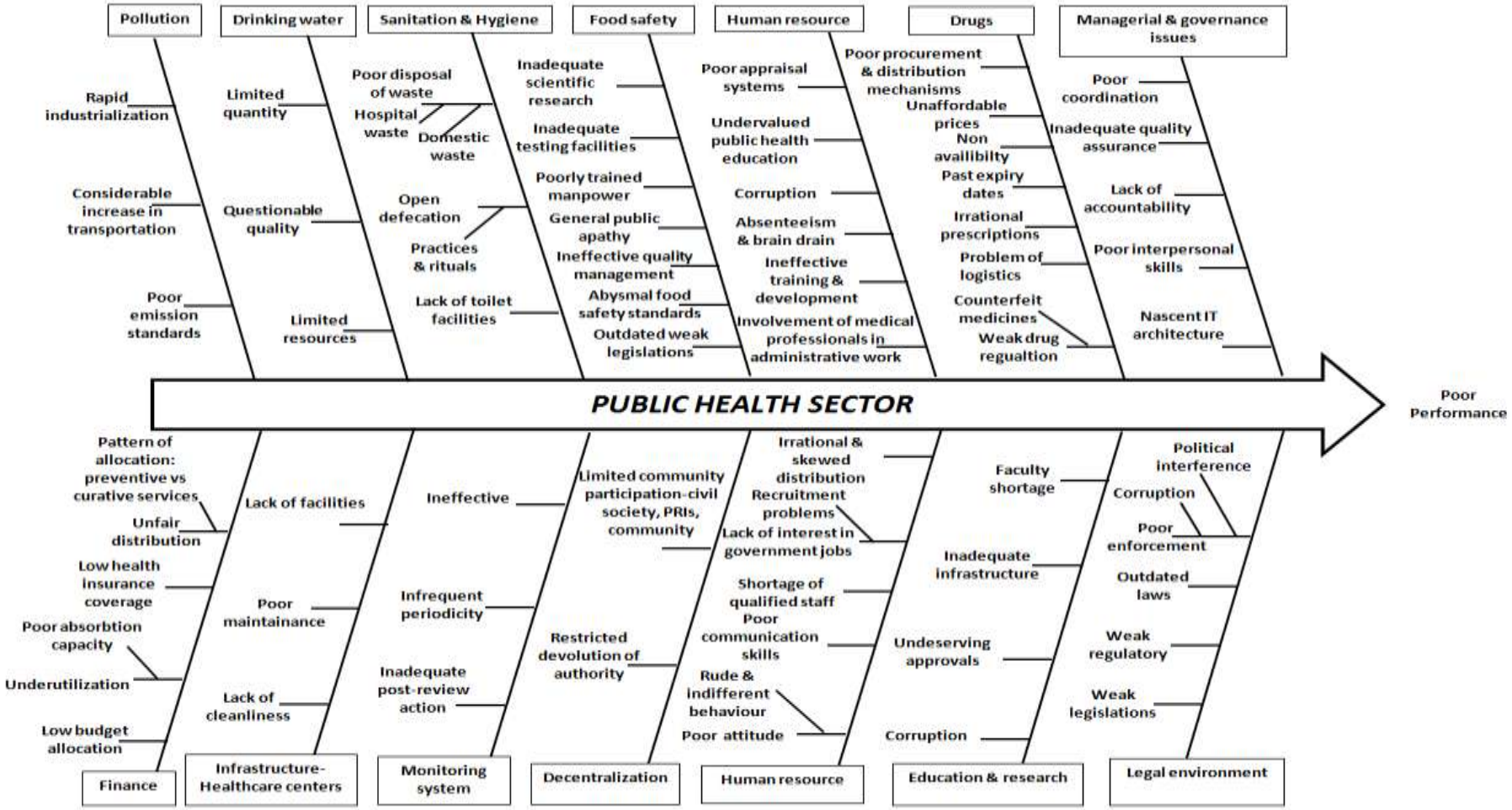

Figure 2.5: Ishikawa Diagram: Causes of poor performance of the health sector

Chapter 3

METHODOLOGY AND DATA COLLECTION

3. METHODOLOGY AND DATA COLLECTION

3.1. Problem Definition

This research work relates to the identification and analysis of the problems in the public health system and the designing of suitable strategies towards resolving them.

3.2. Components of Health System

The objective of the present study was to review the health system and all its segments which directly or indirectly affected the planning or delivery of healthcare services. According to the WHO (2007), the building blocks of a health system comprise governance, financing, human resources for health, service delivery, essential medical products and technologies, and health information systems. These building blocks, interconnected with each other, as shown in Figure-3.1, depict the essential functions of a health system. At the centre is the public at large, the receiver of the healthcare services provided by the health system.

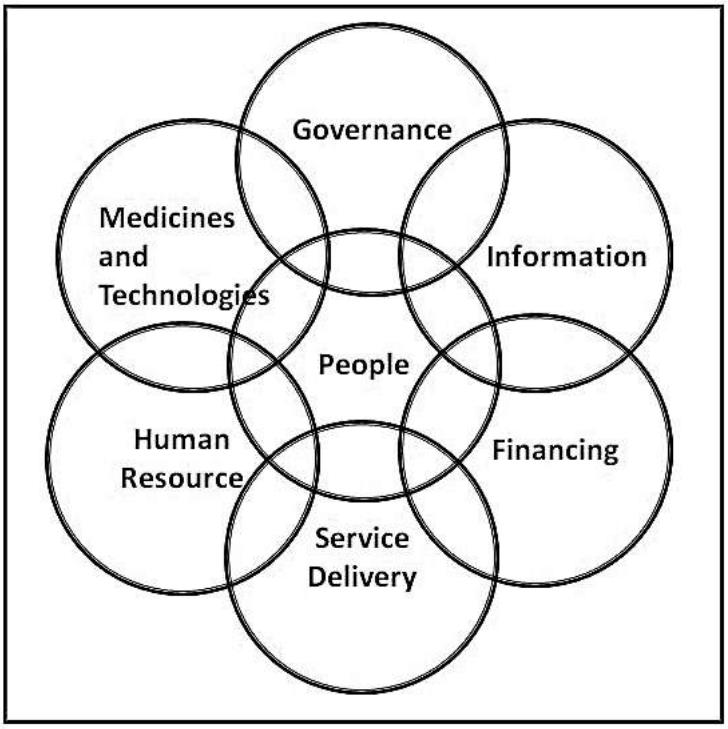

Figure-3.1: Interconnections among the Health System Building Blocks

Note. From De Savigny, D. & Adam T. (2009). Systems thinking for health systems strengthening. Geneva, World Health Organization, pp. 32

In the previous chapter, the healthcare sector was comprehensively viewed as consisting of 18 segments. To facilitate the conduct of research and taking a cue from the WHO (2007) about what comprised a health system, these segments were reviewed and regrouped into two major categories, viz. 'infrastructure' and 'administration', each with its own components. It was ensured that each element contained in the 18 segments found an appropriate place in one of the new categories.

The following is a comparison between the building blocks (WHO) and the components proposed in this study.

Table-3.1: Building Blocks (WHO) and the Components

S. No.	Building Blocks-WHO	Components
1	Leadership and Governance	Administration
2	Financing	Finance and Insurance
3	Human resources for health	Human Resource
		Education
		Research
4	Service delivery/ Health services	Administration
		Buildings & Constructed Space
		Equipments and Facilities
		Environment
5	Essential medical products and technologies	Drugs, Pharmaceuticals and Consumables
		Equipments
6	Health information systems	Administration
		Human Resource

A well designed and effective infrastructure can ensure accessibility of healthcare services to consumers at all levels. Administration, on the other hand, is concerned with the delivery of quality service at affordable prices. How efficiently the inputs are managed so as to improve the quality of service delivery in terms of accessibility and affordability, is a real measure of performance of the public healthcare system. The components under each category, as decided for this study, are listed in Figure-3.2 below.

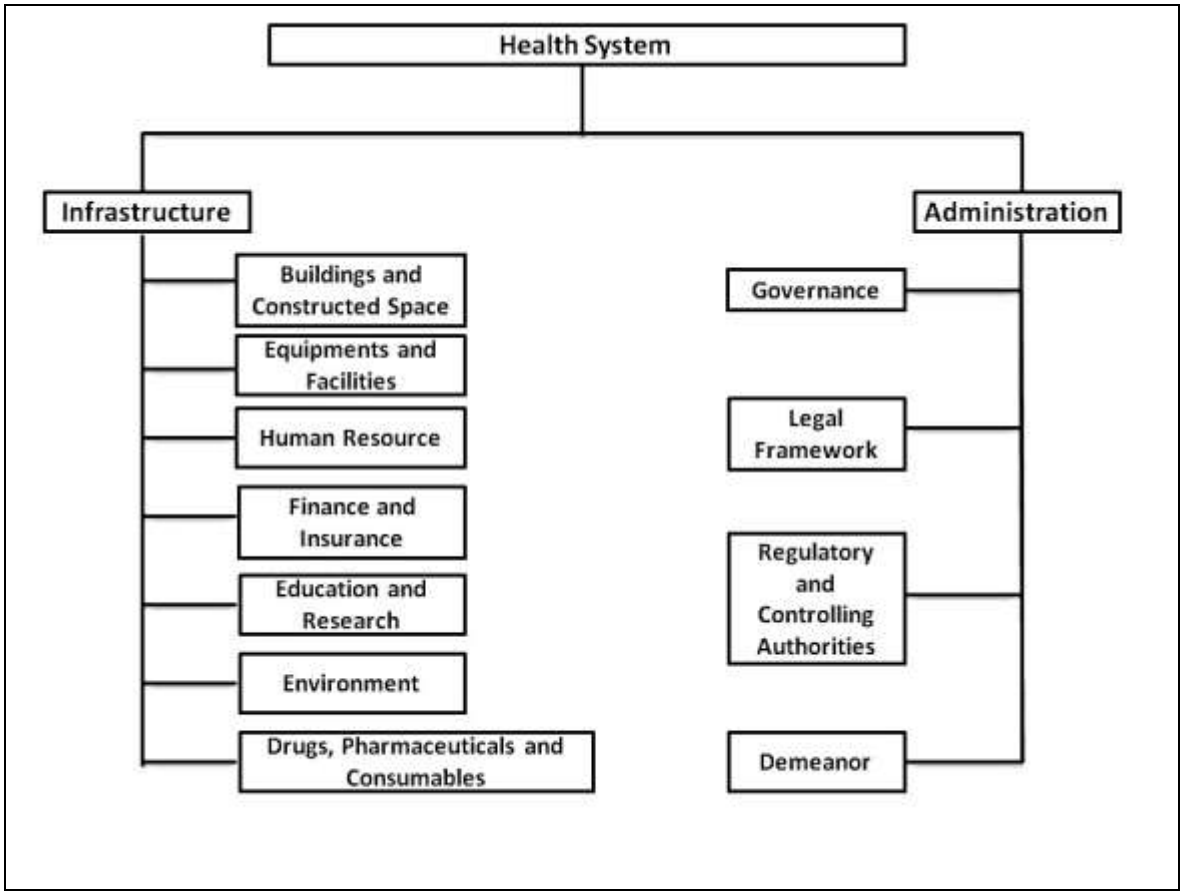

Figure-3.2: Components of a Health System

The various components that constitute 'infrastructure' are:

a. **Buildings and constructed space**: It includes buildings for medical and other allied health education, and public healthcare centers (government hospitals, dispensaries, district hospitals, community health centers, primary health centers and sub-centers, laboratories, diagnostic centers, etc.).

   A point to note here is that it is not just the numbers and capacities of all these units, but also how these are dispersed across the country, which in effect determines the ease of accessibility, usefulness and the degrees of usage by the public. Physical conditions of the buildings and the nature and state of facilities available at these, also affect the demand for the services they offer.

b. **Equipment and facilities:** Equipment includes all paraphernalia for analysis and diagnosis, instruments of all kinds and forms, hospital furniture, and vehicles including ambulances. Of concern here, are the availability, manufacture, import, supply and distribution, repairs and maintenance, transportation of men and machines, and their preparedness for managing disasters.

Constructed buildings are of little use if these are not furnished with fully functional equipment and facilities.

c. **Human resource:** It encompasses development and supply of qualified manpower in terms of both suitability and adequacy, to meet all types of requirements and at all levels of planning and delivery of healthcare services. A knowledgeable, competent and motivated workforce is critical for effective functioning of a health system (Dieleman & Harnmeijer, 2006). According to a number of studies, growing requirements of dedicated workforce necessitates a serious review of the rate of supply of qualified personnel and their pre- and post-qualification training, and several other related factors, such as distribution, retention and migration of manpower.

d. **Finance and insurance:** Finance is one of the key inputs that impact on the performance of a healthcare system. In the absence of requisite funds, services simply cannot be provided. Indeed, quality becomes relevant only after services are provided in the first place. Having the required finances, allocating these based on needs, and eventually ensuring that they are used efficiently, are all germane to the effectiveness of a healthcare system. One of the other functions of the government is to provide protection to people against the rising costs of healthcare. Limiting the people's out of pocket expenses by widely promoting health insurance covers has now become a prime necessity, particularly in today's situation when those insured happen to account for only a fraction of the total population.

e. **Drugs, pharmaceuticals and consumables:** It encompasses availability, manufacture, import, supply and distribution of all of these with due regard to quality and price. The new pharmaceutical policy (National Pharmaceutical Purchasing Authority, 2012) focuses on the much needed control of drug prices. It is an attempt to ensure that essential medicines are made available to the public at affordable prices, especially these days when a major element of the out of pocket expenses relates to the purchase of drugs (Kumar et al., 2011).

f. **Environment:** It includes all external factors that impinge on the conduciveness to the development and maintenance of good health for the nation's population. Environment means to imply provision of safe drinking water, sanitation, food safety, and several other related healthcare inputs. These are critical for effective

functioning of the healthcare system, both preventive and curative. Environment here does not include legal and governance factors as these are dealt below separately under 'Administration'.

g. **Education and research:** The primary responsibility of an overall healthcare system is to maintain the health of the masses. For this system to be effective it needs to be assured of a regular supply of quality healthcare personnel. In India this requirement is almost entirely sourced from the domestic sub-system of medical and allied health education. Medical education and subsequent training of these professionals must remain relevant to the needs of the society. To the extent possible, it must provide room for absorbing all new developments in the field. Professional education and practice is enriched through research. Research requires an inquiring mindset and indeed, it goes hand in hand with education. The realm of research begins with inquiry, and through experimentation ends up in application - theoretical or commercial. All progress in professional education or practice depends on research. Besides progress, research also ensures sustainability. The fruits of research and development must leave the confines of laboratories and move into markets. This is what the researchers must do to justify the huge investments in research, which sometimes a poor country can ill-afford. The government has emphasized the importance of having a strong research base and has confirmed its commitment in the document on the formulation of the 'National Health Research Policy' (NHRP) (MoHFW, 2011b). Cost-effective interventions are important but no less valuable it is to continuously work upon devising newer interventions and ensuring that these are communicated well in time for the benefit of all stakeholders e.g. the government, civil society, NGOs and the public at large.

To ensure the delivery of adequate and quality healthcare services to the masses, India therefore needs an 'infrastructure' that comprises an appropriate mix of all the above components.

The category other than 'infrastructure' is 'administration'. The Oxford dictionary defines 'administration' as the 'process or activity of running a business, organization'. Broadly, 'administration' encompasses the structure of the organization right from the ministries and departments down to the block level, along with clearly defined roles and responsibilities of not just the centre and the states, but also of their personnel involved in

the delivery of healthcare services. Thus, 'administration' in this study means to include 'governance' and a few other components.

a) **Governance:** This means to imply administration at all levels. It encompasses in its fold the concerned ministries, departments, other related organizations, health policies and national programmes. Kaufman and Kraay, as cited in Lewis (2006), defined good governance as "the traditions and institutions by which authority in a country is exercised". More specifically, it is the capacity of the government to formulate and implement sound policies, manage resources and provide services efficiently. Lewis (2006) again cited Kaufman, Kraay and Mastruzzi in suggesting six dimensions of governance, namely voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and, control of corruption - all of which affect the environment within which the healthcare services function.

   Whatever be the government's investments in public health, the results have not been commensurate. One likely reason is its lack of focus on governance. When institutions do not function effectively, priorities lose their significance and, in the process, scarce resources get wasted. Eventually, the effectiveness gets compromised by the culture of poor governance and corruption.

b) **Legal status:** It includes all public health laws that relate to the rights and responsibilities of service providers and patients or their families.

c) **Regulatory and controlling authorities:** Bodies responsible for regulating and controlling public health activities include, but are not limited to, non-government councils and associations such as the MCI, DCI, Indian Medical Association (IMA), Indian Public Health Association (IPHA), UGC, and the National Assessment and Accreditation Council (NAAC). The roles and responsibilities of these bodies, including the protocols to be followed in the form of manuals and procedures, need to be periodically revisited and revised in the contemporary contexts.

d) **Demeanor of employees of the government/service providers engaged in the delivery of healthcare services:** Here, the components that call for a review and modification are the attitude, commitment and discipline of the healthcare workers engaged at various levels in the public health system.

Fair and effective dispersion of healthcare facilities, suitable control of drug prices, updated legal provisions and improved governance, can provide a robust foundation for the development of a strategy which would have the potential to ensure delivery of healthcare of a certain minimum quality at affordable prices to all people across the country.

3.3. Research Methodology

The methodology adopted for the study is delineated in Figure-3.3

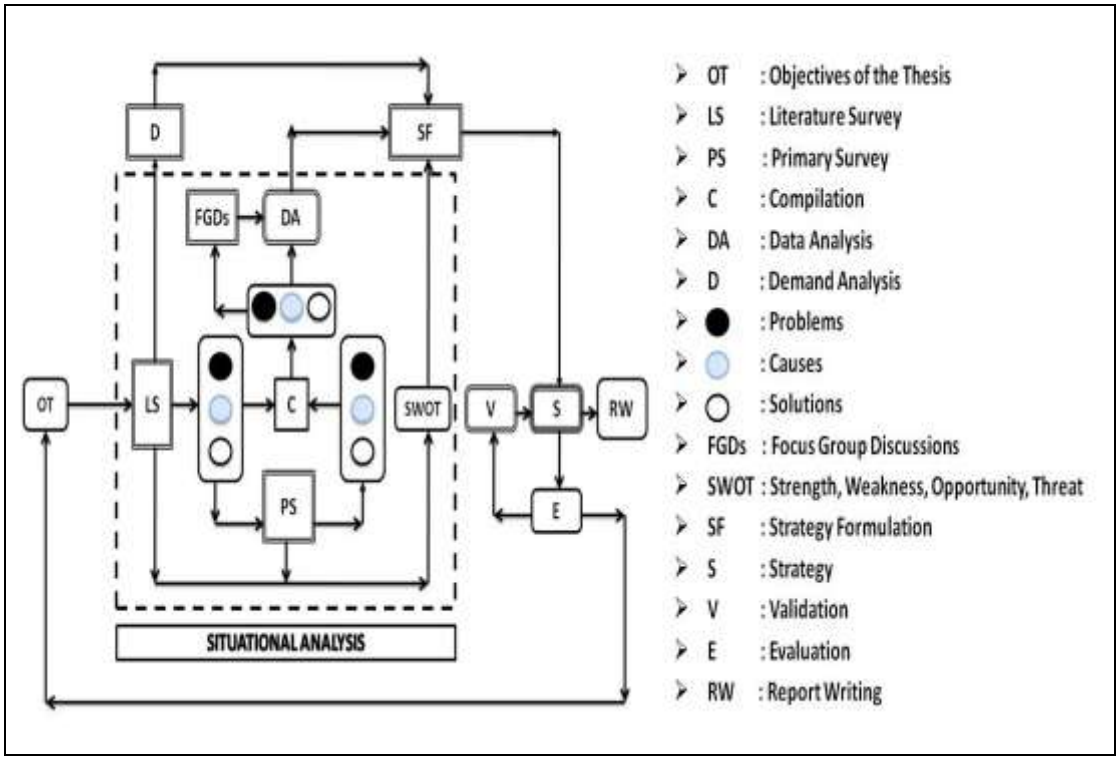

Figure-3.3: Research Methodology

The methodology for this research consisted of two parts. The first part related to collecting of all required data, analyzing and processing it. It involved preparing a comprehensive list of problems afflicting the public health sector along with their causes and solutions. Broadly, it consisted of the following steps:

- Review of available literature to generate a tentative list of problems, their causes and possible solutions

- Identifying the components of the health system
- Conducting a primary survey to verify the problems, probable causes and solutions as identified from the secondary sources, and in the process also identifying new problems, if any
- Preparing the data for processing
- Conducting Focus Group Discussions to sort out inconsistencies/ambiguities, if any
- Eventually, developing a comprehensive list of all problems, their probable causes and suggested solutions

The second and last part of the research was concerned with the generating of all other inputs and formulating the strategies. The steps undertaken in this part were:

- Analyzing the present and projected demand for healthcare services and determining the gaps with the projected supplies for the corresponding periods
- Carrying out an environmental analysis of the sector's internal strengths and weaknesses and the opportunities and threats posed by the external environment (SWOT), to the extent these were seen to affect the formulation of the strategies
- Formulating the strategies that would leverage on the strengths and opportunities and, at the same time, potentially neutralize the internal weaknesses and external threats
- Evaluating the strategies by way of internal verifications and external validation

3.4. Research Design

The present research follows a qualitative paradigm. In discussing the usefulness of a qualitative approach, Nichter, Quintero, Mock, & Shakib (2004) mentioned that, 'One of the true strengths of qualitative research is the framework it provides for understanding and appreciating human experiences (thoughts, beliefs, and behaviors). The rich details of perceptions, experiences and opinions of the study population can be difficult to achieve through a quantitative approach'. The present research required delving deep into the problems of the health system in the public sector and therefore, it

was necessary to adopt a qualitative approach. A strict quantitative approach would not have allowed exploring the extensive and inscrutable issues.

The study had an exploratory and a descriptive part. In general, exploratory research is used for formulating a problem for more precise investigation, developing hypotheses, establishing priorities for further research, gathering information about the practical problems of carrying out research on particular issues, increasing the analyst's familiarity with the problem or clarifying concepts. In the present study, the exploratory part of the research had the objective of identifying the problems afflicting the healthcare services, particularly in the public sector. Comprehensive lists of problems, their probable causes, and likely solutions were prepared, and the study then progressed towards the formulation of strategies.

For the first part of the study, an extensive desk research was carried out. It helped to identify the components of the health system as well as prepare a tentative list of problems. Questionnaires were designed for each component. In-depth interviews were the preferred choice for collection of data. As a research tool, such interviews are an excellent means of collecting information in situations where it is essential to explore the multi-dimensional views of the issues involved (Rowley, 2012). Although, personal interviews are more time consuming, costly and pose the difficulty of simultaneously recording responses to 'open-ended' questions, yet it provides flexibility in sequencing of questions, and affords the opportunity to clarify doubts right when the discussions are on. In the present study, suitable questionnaires were used to collect information, and this approach allowed the researcher to actively participate in face to face interviews and penetrate deeper into the nature, impact and extent of the problems.

In order to ensure a fair representation of states, the entire country comprising all the states and union territories was considered as the sampling frame. The government's formal classification of states as 'high-focus' and 'non high-focus' (guided by health indicators) was used to identify the sample states (NRHM, n. d.). The high focus states were those that exhibited poor health indicators while non-high focus states were seen to fare better in terms of the same health parameters.

Delhi being the national capital was necessarily included as a sample state for the survey. Excluding Delhi, there were effectively three categories, viz. high focus states, non-high focus states and non-high focus Union Territories. Applying 'quota sampling', $1/3^{rd}$ of the states in each category was considered for sampling. With due regard to these

categories, ‘convenience sampling’ was used to identify the sample states. In deciding upon the methods of quota and convenience sampling, it was felt necessary to ensure that the population covered by the selected states represented a large enough share of the country’s total population.

The respondents for the in-depth interviews comprised officials who were either employed in the health or related areas in the public sector, or were involved in doing business with them. The purpose was to ensure that the respondents in the study were engaged in either the planning or delivery of healthcare services, understood the research questions, and preferably also spoke frankly and objectively. The respondents were carefully chosen to ensure that being placed in responsible positions they could bring about changes, and implement or influence strategies.

Snowball sampling was used to identify the sample units. This sampling technique is useful in a research like the present one, where the respondents are selected from the friendship network of the initially approached respondents (Salganik & Heckathorn, 2004). Considerable prior planning helped in optimizing the time spent in visiting the sample states and meeting the requirements of convenience of the respondents.

Recognizing the possibility of some inconsistencies or ambiguities between the data obtained from primary and secondary sources, a slot was provided for a few focus group discussions (FGDs). Authors have mentioned that triangulation (multiple data collection techniques) ensured internal validity of the data in a qualitative research (Nakkeeran & Zodpey, 2012; Roberts, Priest, & Traynor, 2006).

The descriptive part of the research involved analyzing the data and designing suitable strategies. This was done by first coding the raw data and entering it in MS-Excel, and then processing it through collation, reduction, merging and demerging, etc., so as to prepare it for further analysis.

Content analysis was used as a tool to analyze the final data. It is one of the most common methods to analyze qualitative data. Weber (1990) defines it as a method that uses procedures to make reliable and valid inferences from text. Westbrook (1994) mentioned that content analysis is ‘based on the premise that the text from interviews and observations can be reduced to categories in which words share the same meaning or connotation’.

Applying content analysis and by way of associated keywords, the solutions were mapped onto suitable areas of focus, each of which was to serve as specific domain for a sectional strategy.

Using the outputs of SWOT and demand analyses, in conjunction with the multitude of keywords, the overall strategy was formulated. This was followed by developing sectional strategies using the keyword-guided solutions. The main strategy was used as the anchor to ensure consistency. After internal verification, the strategies were sent to various experts for external validation using the Delphi technique. The research work ended with the writing of the present thesis.

3.5. Data Collection

The study uses data collected from both primary and secondary sources. The secondary data was collected from various published reports and documents through desk research. Major sources included journals and newspaper articles, published government reports, including evaluations and appraisals of various programmes, schemes, Five-Year Plans, etc., both in the print and electronic media. In addition, various available and relevant grey literature comprising reports, articles, studies, etc., were also referred to. It served two purposes. First, it helped in identifying the components of the health system. Understanding each of the components, as elaborated earlier, was necessary so as to gain a clearer appreciation of the system as a whole. Second, it helped in generating tentative lists of problems, their causes and probable solutions.

The discussion that follows explains the process adopted for data collection. The primary data was collected from officials sampled from the health sector. They were personally visited and interviewed. The focus group discussions, which were held at selected places, involved members of the general public.

3.5.1. The Field Survey

The basic purpose of field survey was to hold discussions with the identified respondents and capture their views in regard to the host of observed problems, their probable causes, and suggested solutions. Therefore, the objectives of the field survey were:

- To learn from the respondents about
  - the problems and glaring issues that affected the performance of health sector
  - the causes of these problems and, to the extent possible, ways to resolve them
- To validate the existence of problems as identified from the secondary sources
- To add on possible new problems that could come up during discussions making the list more complete
- To prepare a comprehensive list of 'what could be done' to resolve these problems or, at least limit/minimize their effects, so that the performance of health sector could be upgraded as much as was possible

The sum and substance of the objective was, therefore, to list/identify the major problems that affected the performance of health system and find possible solutions to remedy the situation.

3.5.2. Data Collection Instruments

To fulfill the above objectives, a set of eight semi-structured questionnaires were prepared, each corresponding to a component. These were finalized after conducting necessary pre-tests (to ensure common understanding, completeness, and proper sequencing) and pilot tests (with real samples) to bring in necessary modifications. In addition, shortlists of prompt questions were prepared which were to be used as an aid in the course of interviews. Appendices I and II provide the standard format of specimen questionnaire and prompt questions for all components.

3.5.3. Sample States and Sampling Distribution

The approach to choosing the sampled states for the field survey is already explained above. However, just to mention briefly, the sampling frame comprised all Indian states and Union Territories. From these twelve sample states were chosen using the government's classification of high-focus and non high-focus states (NRHM, n. d.). Using the method of quota sampling it was decided to choose 1/3rd of the states in each of the three categories (high focus-states, non high focus-states, and non high focus-union territories). The sample states in each category were identified through convenience sampling. Table-3.2 describes the sampling distribution. The population statistics relate to

the Census 2011 (Ministry of Home Affairs, 2011). Table-3.3 lists the states visited under each category.

Table-3.2: Sampling Distribution

Category of states and UTs		India		Identified Areas		% Distribution	
		States	**Population**	**States**	**Population**	**States**	**Population**
High focus states		18	620,168,652	6	341,885,218	33.33	55.13
Non High focus-states		10	569,942,248	3	184,508,727	30.00	32.37
Non High focus UTs	**Delhi**	1	16,753,235	1	16,753,235	100.00	100.00
	Rest UTs	6	3,329,287	2	2,299,150	33.33	69.05
Total		**35**	**1,210,193,422**	**12**	**5,45,446,330**	**34.29**	**45.07**

Table-3.3: States selected under different categories

S. No.	High Focus States	S. No.	Non-High Focus States and Union Territories
1.	Uttar Pradesh	7	Andhra Pradesh
2.	Rajasthan	8	Tamil Nadu
3.	Chhattisgarh	9	Punjab
4.	Assam	10	Puducherry
5.	Himachal Pradesh	11	Chandigarh
6.	Uttarakhand	12	New Delhi

3.5.4. Respondents

Interviews were held with officials placed at different hierarchical levels in various multilateral, government and non-government organizations/departments, pharmaceutical companies, research and academic institutions, etc. To develop contacts with prospective samples the snowball technique was used. From the reference received from the first research participant, the next eligible resource person was approached, and so on and so forth. This helped in identifying more officials, who were people of the right kind for this study. Most of the individuals who agreed to share their opinions did so under requests for varying conditions of confidentiality. In deference to their wishes, therefore, their names are not mentioned anywhere in this report.

The profiles of the respondents are described below:

- **Public/Private Sector:** Public sector organizations are essentially those where the government has major shareholding and are managed by boards appointed by the government. Private sector organizations are owned and managed by individuals in their private capacity.
- **High Focus/Non-High Focus States:** The respondents were drawn from both the high focus as well as non-high focus states.
- **Geographical Coverage:** To ensure a fair representation the study covered organizations in as many as 12 states across India.
- **Functional Departments:** The respondents were from health and health related departments like public health engineering, education, etc. Table-3.4 (placed at the end of this chapter) presents the state-wise list of departments which were contacted for the purpose of data collection.

3.5.5. In-depth Interviews

In-depth interviews were conducted with the sole purpose of exploring the respondents' points of view, feelings and perspectives with respect to the problems plaguing the healthcare system in the country. This required approaching people who were among the very knowledgeable in this field. The structures of various organizations were studied to get an idea about the roles and responsibilities of the official positions, and a tentative list of prospective respondents was developed. Based on this assessment, emails were sent to people, who appeared to be aware of the activities in the field of study. The purpose was to seek their consent for their participation in the survey and fix up appointments. The response rate turned out to be very poor with the result that eventually cold calls had to be made.

While conducting interviews the researcher was not only involved in asking questions, but also in understanding and systematically documenting the responses, coupled with intense probing to seek out deeper meanings. Each interview lasted from about half an hour to two hours, with the average time spent per respondent being almost 45 minutes. In all, 154 officials, across 12 states, were interviewed. Table-3.5 lists the total number of interviews conducted in each state.

Table-3.5: State-wise list of in-depth interviews conducted

S. No.	Location	No. of Respondents
1	New Delhi	29
2	Uttar Pradesh (Lucknow)	16
3	Chhattisgarh (Raipur)	14
4	Himachal Pradesh (Simla)	10
5	Rajasthan (Jaipur)	14
6	Assam (Guwahati)	12
7	Tamil Nadu (Chennai)	15
8	Andhra Pradesh (Hyderabad)	13
9	Punjab (Chandigarh)	5
10	Puducherry	4
11	Chandigarh	11
12	Uttarakhand (Dehradun)	11
Total		**154**

Each of the 154 respondents was approached with a particular questionnaire in mind. The distribution of respondents for each questionnaire is shown in Table-3.6

Each respondent was asked to comment on the problems relating to a specific component. However, one was not restrained from stating a problem if it related to another component. Some of the problems mentioned by them were already known to the researcher while a few others were new disclosures.

Table-3.6: Distribution of state-wise respondents for each questionnaire

S. No.	Components / Locations	1.1	1.2	1.3	1.4	1.5	1.6	1.7	2.0
1	New Delhi	√	√	√	√	√	√	√	√
2	Uttar Pradesh	√	√	√	√	√	√	√	√
3	Chhattisgarh	√	√	√	√	√	-	√	√
4	Himachal Pradesh	√	√	√	-	√	√	-	-
5	Rajasthan	√	√	√	√	√	-	√	√
6	Assam	√	-	√	√	√	-	√	√
7	Uttarakhand	√	-	√	√	√	√	-	√
8	Tamil Nadu	-	-	√	√	√	√	√	√

9	Andhra Pradesh	-	-	√	√	√	-	-	√
10	Punjab	-	-	√	-	-	-	-	-
11	Puducherry	-	-	√	-	-	-	-	-
12	Chandigarh	-	√	√	√	√	-	√	√

3.5.6. Findings

The output of the primary survey was rich descriptions of the issues affecting the performance of the healthcare sector based upon the respondents' experience and opinions. The data so obtained was collated together with the information already abstracted from the secondary sources so as to develop a comprehensive lists of problems, possible causes and suggested solutions. An interim analysis when carried out at this stage threw up a few inconsistencies. These are listed in Table-3.7

Table-3.7: Inconsistencies

S. No.	Observations from Secondary Survey not mentioned in Field Survey
1.	Generics were perceived by people as medicines of poor quality.
2.	Norms for health centers were based on population rather than on habitation.
3.	Insured patients were directed, without medical reason, to go for procedures like appendectomy, hysterectomy, etc.
4.	Patients were asked to purchase drugs which ought to have been supplied free of cost.

These variances needed to be clarified. Therefore, a few focus group discussions were organized, the details of which are discussed below.

3.6. Focus Group Discussions (FGDs)

It was a strategic decision to conduct focus group discussions to iron out inconsistencies in responses if any. Ideally, therefore, these could be conducted only after the field survey was over, for by then the researcher would have developed a fair idea about the issues of concern in various parts of the country, and therefore somewhat better placed to guide the discussions.

Since an interim analysis of the problems, their causes and the recommended solutions identified from the primary and secondary sources, threw up certain inconsistencies, it became necessary to conduct a few FGDs to reconcile the differences.

The other reasons, besides the above, for conducting the FGDs were:

1. To explore the general perceptions about the issues involved in the delivery and utilization of healthcare services
2. To list the problems faced by the people and seek ways to address them

These discussions not only helped in understanding the issues from the users' points of view but were also useful in verifying the solutions provided by the secondary and primary sources, or those broached by the researcher. Incidentally, in the process, some new solutions were also discovered.

3.6.1. Locations and Participants

FGDs were held at four places namely, Lucknow, Dehradun, Delhi and Pilani – the selection was entirely based on convenience. In all, six discussions were held, each with around 6-10 members. It was ensured that the groups were large enough to generate a meaningful discussion, and yet small enough to allow for expressing of all opinions. Each group consisted of people with diverse backgrounds to ensure a heterogeneous mix of doctors, university students, government and private sector officers, housewives, service providers including pharmacy retailers, diagnostics, hospitals, nursing homes, etc. Care was taken to exclude respondents who had participated in the primary survey. Before the discussions were allowed to begin, the participants were briefed about the objectives and assured confidentiality. They were also informed that they had the privilege to withdraw from the study at any time.

A discussion guide consisting of a few open-ended questions was prepared to facilitate the researcher, who was also the de facto moderator. The participants were encouraged to speak freely and share their individual views with the other members of the group. Each FGD lasted from 60 - 90 minutes, and was audio taped. The tapes were later transcribed verbatim.

3.6.2. Findings

The participants for FGDs were chosen using convenient sampling. A total of 44 people participated in the discussions. The mean age of participants was 37.7 years. The gender profile of participants was: 55 percent male and 45 percent female. The age-wise distribution of the participants is given in Table-3.8.

Table-3.8: Age-wise Distribution of Participants in FGDs

Age group	Number	Gender	
		Male	Female
25-35 years	16	6	10
36-45 years	20	11	9
46-55 years	6	5	1
56-65 years	2	2	0
Total	44	24	20

The participants were mostly professionals; just a few were full time homemakers. Majority of the participants were either graduates or post graduates and only a few were educated up to high school.

Out of the four inconsistencies, the only problem which found support in the FGD was: "Patients are asked to purchase drugs which ought to be supplied free of cost."

3.6.2.1. Problems

The following were the notable problems mentioned by the participants:

- Because of a lack of faith in the quality of government healthcare facilities, people often chose private centers even though these cost them more. The quality of services, particularly those required at unusual hours, was a matter of concern. One of the respondents reported: '*Once I accompanied a friend, who suffered burn injuries, to a nearby government hospital. The doctor declined to treat, until he was bribed.'* The growing public apathy and cynicism was widely evident. Another participant pointed out that *'…the behavior of doctors and other staff was so rude that it really put them off'. Also, '…the behavior of the same doctors would change no sooner than they were offered bribe!'* Yet another participant mentioned that

'...without any useful contact or support, one had to simply run around various departments in a hospital merely to meet and consult a doctor!'

- Poor/lack of facilities in public hospitals demotivated doctors and affected their performance. Also, as a result of the primary healthcare system being almost non-functional, there was extra load of patients on the secondary and, more importantly, even on the tertiary care hospitals. A participant pointed out that *'...these hospitals were meant for training post graduate students but because of the overload of patients they ended up treating cases which could have been easily disposed of at lower-level centers had they been functional as intended'.* One reason for the poor performance of doctors was the non-availability of required facilities. In a way, it did frustrate them.
- A lack of care and maintenance resulted in the ever-increasing lot of discarded hospital equipments/appliances. Absence of accountability and poor definition of job roles and responsibilities were the reasons for the lack of focus on maintenance of equipments. '*For them the easiest and preferred way was to refer patients to diagnostic centers and pocket some commissions in return'* said a participant.
- Vacant posts in rural healthcare settings and limited service delivery staff were a chronic problem in the health system, and that led to work overload at these centers. Another reason for the overload was the number of schemes and programs added on periodically.
- Because of *'...a lack of basic amenities such as road connectivity, transportation, accommodation, etc., in the rural areas, the doctors and other healthcare personnel were less inclined to join government service; ...after many years of study they did expect postings at locations conducive to comfortable working'*, mentioned a participant.
- Absenteeism was widespread. A participant mentioned that *'...political patronage was a reason for many weaknesses in the system, including the usual sight of employees staying away from official duty'.*
- The system of personnel appraisal was ineffective. It provided no encouragement to those who performed well. Participants were of the opinion that the urge to perform well did not exist in the public sector. Employees were often engaged in private practice while they remained employed in government hospitals. The main reasons for this were guaranteed job security and weak governance. The basis for

promotion was the length of service and it had nothing to do with the quality of performance.

- Drugs were not available at affordable prices. Participants expressed concern about the rising costs of drugs.
- Poor financial management was another issue raised by the participants. Some felt that *'…there was a lack of transparency in utilization of funds'.*
- Private colleges charged exorbitant fees for medical education. Participants were of the opinion that stricter control of the private sector was necessary. One of them noted '*The high fees paid for education compelled doctors to recover these later by way of private practice'.*
- Healthcare workers were of poor quality. Participants felt that the quality of nurses and other paramedical staff was not as good as expected. Paramedical education deserved greater attention from the government.
- Inadequate monitoring and supervision resulted in poor utilization of resources. It also led to inaccuracies in data entry and reporting. Comments of some participants were as follows:

  '…in a major scheme like Rashtriya Swasthya Bima Yojana (RSBY), the data for the family status did not seem to have been revised since it was first recorded in the year 1999. Changes arising from births, deaths, emigrations, etc., still remained to be incorporated'.

  Another participant from Dehradun explained that although the scheme was based on such vital information as whether a particular family was indeed BPL, yet that was never physically verified.

  Some participants felt that the RSBY was not functional at the ground level. The hospitals required them to first deposit around Rs. 30,000/- before they could expect any kind of service/treatment. The pre-conditional amount of Rs. 30/- deposited earlier for enrollment was a waste because if they had the amount of Rs. 30,000/- available with them, they would not have sought the card at all. The irony was that the government hospitals invariably recommended that the patients avail service from private hospitals since in any case no payments were involved. The private hospitals, on the other hand, were hesitant because they were not too sure as to when they would receive the reimbursements.

Another participant from Delhi complained that no official had come to evaluate the functioning of the scheme after the card was supplied. No action was taken on this issue despite repeated reminders to higher officials.

- Weak legislation and poor enforcement allowed offenders to get away freely. It was rued that there was no fear of law. Corruption was pervasive all across society and yet not many were booked or punished. Political connections/patronage and sluggish judicial process were the other reasons for poor enforcement.
- Entitlements for drugs, diagnostics, referral transport and other services like deliveries at no cost at public health facilities, etc., were not clearly articulated or publicized. Some participants were not even aware of the Right to Information (RTI) or Rogi Kalyan Samitis (RKS).
- A weak or non-existent system for redressal of complaints at health centers added to the woes of patients/relatives. According to some participants, this helped to support the culture of the public sector authorities to remain unaccountable.
- The sector is rife with corruption: A participant said, *'….corruption and public awareness are interrelated. Corruption will be less prevalent if people are made more aware'.* Another pointed out that *'…while some senior officers were reported to have been involved in misappropriation of funds in NRHM, initially there was some noise but it died down in course of time . What actions, if any, were taken, where the money had gone, or what measures were adopted to prevent similar instances in future…., no answers were provided to the public.'*

  A participant commented: *'…the public feels that their money finally goes into the pockets of a few ministers, politicians and some government officers whereas it ought to have been used for providing service to the masses.'*

  Another recounted that while leaving a hospital after receiving treatment, he was approached by a nurse for some baksheesh. A notice on the wall asked patients not to entertain such requests. When he pointed to the notice, the nurse felt embarrassed and disappeared hurriedly.

3.6.2.2. Remedies

The following were some remedies suggested by the participants. They were all of the opinion that a positive change could be brought about only if there was a political will to do so.

- Instruct all politicians to get treated only at government healthcare facilities, and as ordinary citizens. It would ensure better maintenance and improved quality of service. Importantly, it would motivate middle class population to avail treatment at government hospitals.
- Treat administration in government hospitals as a separate department.
- Engage independent agencies to process complaints from patients.
- Provide more funds to bring about an all round improvement in the health system in terms of operation, maintenance, supervision, monitoring, evaluation and control.
- Make officials answerable to the general public. But, before that, ensure that people are made aware of their rights and entitlements. Also, to ensure accountability, keep hospital employees at all levels informed about their individual responsibilities. Install biometric systems to improve attendance, and show availability of doctors on display boards for tracking.
- Provide every employee an identification badge with his name and position inscribed on it. It will give them some sense of pride, besides making it convenient for patients/visitors to record complaints against any one, should there be an occasion for it.
- Increase the doctor : population ratio by recruiting more doctors; establish more medical colleges, particularly at the district level; raise the number of seats for admissions to existing colleges.
- Introduce a workable and effective system of personnel appraisal; for better performers consider out of turn promotion or preferred posting, and introduce disincentives for poor performers.
- Snap the nexus between doctors and pharmaceutical companies, politicians, diagnostic centers, etc., by effecting regular and compulsory transfers.
- Regulate private practice by doctors and other medical professionals. Act promptly against non-compliance.

- The only way to curb corruption is to have quality leadership and good governance in place. Also, social upbringing plays an important role in one's staying away from corrupt practices, for the younger generation learns from observing the elders. Reintroduce the subject of moral education in schools.
- The government needs to use a comprehensive format for seeking all information across different programs and different ministries/departments, and then sort/filter these as per its instant requirements. This will help to reduce the number of people required to do the job and also make it convenient for the public to supply information. Physical verification and regular updating of data is essential to make information more reliable and useful.
- The planning process needs to be decentralized to improve implementation. Inform Panchayats regularly about the new schemes and their benefits. Capacity building of members of PRIs (Panchayati Raj Institutions) is crucial.

3.6.3. Conclusions

The findings of FGDs give an indicative idea about how the people or users view the healthcare services, particularly in the public sector.

Key recommendations for improvement were: use political influences, if any, in a positive manner, strengthen the PRI system, and introduce a fair, transparent and accountable system, together with provision of requisite funds and other resources. Greater focus was needed on moral education in schools, generating awareness among masses, and providing a platform for the public to voice its opinion and offer feedback.

The quality of care in the healthcare sector could be improved only if there was requisite infrastructure, and a transparent, accountable and efficient system to optimally manage the available resources.

The process of data collection, which comprised secondary search and field surveys and focus group discussions, yielded rich qualitative data about the existing problems, their probable causes and possible solutions. Further treatment of this data by way of processing and analysis is discussed in Chapter 4.

Table-3.4: State-wise list of departments visited for data collection

Uttar Pradesh (Lucknow)	New Delhi	Chhattisgarh (Raipur)	Himachal Pradesh (Simla)
• Directorate of Medical Education • Directorate of Health • ICICI Prudential Life Insurance Company Ltd • NRHM • Population Foundation of India • State Innovations in Family Planning Service Agency • State Institute of Health and Family Welfare • State Water and Sanitation Mission-Dept. of Rural Development • UP Health System Strengthening Project • Urban Local Body-District Urban Development Agency	• Biogreen Life Sciences • DGHS • Directorate Health Services • Family Planning Association of India • ICMR • Indian Drugs Manufacturers Association • IPE Global Consultants • Kalawati Saran Children's Hospital • Lady Hardringe Medical College • MoHFW • MSG Consulting Pvt. Ltd. • Mylan Pharmaceuticals • NHSRC • NIHFW • Novartis Vaccines India • NRHM • Population Foundation of India • Psychotropics India Ltd. • Quest Diagnostics • Safdarjung Hospital • Sambodhi • World Bank	• Department of Health and Family Welfare • Directorate of Medical Education • NRHM • Public Health Engineering Department • State Health Resource Center	• Department of Panchayati Raj • Directorate Health Services • Directorate of Health and Safety Regulations • Directorate of Medical Education • HP Civil Supplies Corporation • NRHM • Regional Office of Health and Family Welfare

Table-3.4: State-wise list of departments visited for data collection (Contd.)

Rajasthan (Jaipur)	Assam (Guwahati)	Tamil Nadu (Chennai)	Andhra Pradesh (Hyderabad)
• Directorate of Medical and Health Services • Directorate of Medical Education • Drug Controller • NRHM • Public Health Engineering Department • Regional Office of Health and Family Welfare • State Institute of Health and Family Welfare	• Department of Health and Family Welfare • Directorate Health Services • Directorate of Medical Education • NRHM • Public Health Engineering Department • Regional Office of Health and Family Welfare • State Institute of Health and Family Welfare	• Department of Panchayati Raj and Rural development • Directorate of Drugs Control • Directorate of Medical and Rural Health Services • Directorate of Public Health and Preventive Medicine • NRHM • Regional Office of Health and Family Welfare • Tamil Nadu Health Systems Project-Chennai • Tamil Nadu Medical Service Corporation	• Andhra Pradesh Medical Service & Infrastructure Development Corporation • Department of Health and Family Welfare • Department of Panchayati Raj and Rural Development • NRHM • Regional Office of Health and Family Welfare

Table-3.4: State-wise list of departments visited for data collection (Contd.)

Punjab (Chandigarh)	Puducherry	Chandigarh	Uttarakhand (Dehradun)
• Directorate Health Services • NRHM • Regional Office of Health and Family Welfare	• Department of Health and Family Welfare • NRHM	• Biotech Systems • Directorate Health Services • NRHM • Post Graduate Institute • Regional Office of Health and Family Welfare	• Central Medical Stores Department • Directorate Health Services • NRHM • State Health System Resource Center

Chapter 4

ANALYSIS AND DATA PROCESSING

4. ANALYSIS AND DATA PROCESSING

4.1. Analysis of Survey Outputs

During the conduct of field survey some respondents made a few observations about the topic and the scope of this study. These appear important and valuable enough to deserve a mention here.

- Several respondents expressed their concern about the coverage of the topic. They were of the opinion that
  a) a very useful output would have been possible if the research was focused only on a small segment of the health sector.
  b) with too wide a scope of study it would be unlikely that the outputs would be robust and therefore implementable.
- There were other respondents who were of quite the opposite view. They felt that
  a) no study had been made for the entire sector, which in a way was the need of the hour. Unless one had a total view of the entire sector, any strategy, however meaningful, would not have yielded useful results.
  b) it would take far too long to independently study the various sub-components, and in that long duration the entire picture would undergo so much of change that the aggregate findings, however comprehensive, would have little efficacy left.
  c) if the sub-components were to be studied as independent units, the solutions would be of little value because the recommendations in respect of one sub-component potentially might give rise to newer problems in other components.

4.1.1. Data Preparation

The data collected from various sources had to be prepared to make it amenable to processing. Data preparation consisted of a sequence of several steps: reading through and studying the data, getting to the root of the sense of responses to understand the embedded meanings, interpreting them logically, resolving anomalies and reducing the data by way of eliminating duplications, and merging similar responses.

The data compiled from the primary and secondary surveys were first collated together. It led to a comprehensive list of all the 'known' and 'unknown' (newly known) problems for each healthcare component. Next, the data was read and re-read with a view to remove all duplications and to group/merge all problems with identical or similar words/meanings. This detailed exercise led to a comprehensive listing of all 'known' and the newly known problems. A study of this list revealed the following source-wise categories, as depicted in the Venn diagram in Figure-4.1

- Where the findings of the primary survey (PS) are in conformity with those observed in the secondary survey, i.e. an agreement of findings from the primary and secondary survey
- Where the findings of the primary survey are not found in the literature surveyed, i.e. findings unique to the primary survey
- Where the problems observed in the secondary survey (SS) are not found in the primary survey, i.e. findings unique to the secondary survey

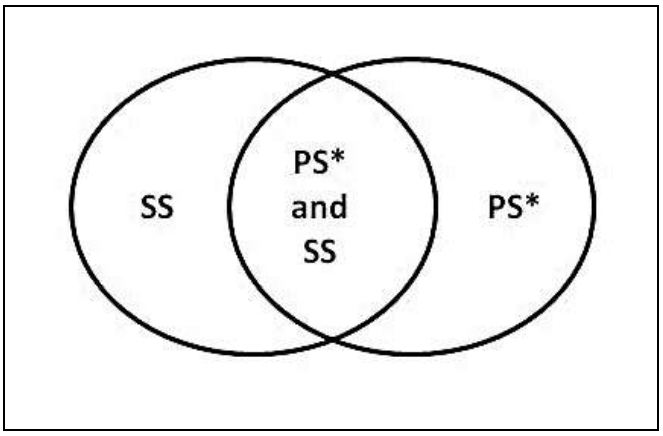

Figure-4.1: Information Sets of Problems Identified

SS: Secondary Survey, PS: Primary Survey, (inclusive of Focus Group Discussions)*

The possible reasons for the mismatches are:

- For the findings which are common to the primary and secondary surveys, the larger the overlap the more should be the level of confidence to believe that the field survey was adequate and reasonably comprehensive. On the other hand, if the overlap is not much, one inference could be that the aggregate size of samples used by the previous researchers perhaps covered a much larger area of the

sampling frame, with the result that some problems reported in literature escaped attention in the present study.

- Also, it is possible that the objectives of the earlier studies were different from those of the present study. In that case the research designs were different, and that might have affected the outputs as reported in the published documents. As a result, a few of the problems found a mention only in the literature survey but were not come across in the field survey.
- Again, where a few problems were reported in the field survey but these did not appear in secondary research, the possible reasons could be a) the present research being more current, these problems might have surfaced well after the previous studies were completed, and b) the present work being an individual study, the respondents were more forthright and candid in their responses.

The final lists of problems, their causes and solutions were suitably rephrased to convey in a concise but lucid form, the essence of the identified issues which apparently affected the performance of the healthcare sector.

4.1.2. Approach to Data Analysis

In order to be able to develop solutions to these problems or develop approaches to addressing the issues, it is necessary to understand the possible causes that had led to these problems. In a research like the present one, it is accepted that there can be several factors that combined together to give rise to a certain problem. In other words, every problem can be seen to have resulted from a plethora of reasons, some discrete and easily identifiable and others which could best be guessed or assumed without any immediate physical evidence. Indeed, there can be no problem without a cause, which means that a set of finite number of reasons are the cause of a finite number of problems. Since the relationships between causes and problems are seldom one to one, it is well-nigh impossible to isolate with certainty the single specific cause of any specific problem. Clearly, all problems identified in this study emanated from a bouquet of causes, some sourced from the literature survey, some others identified after from the primary survey, and still a few others which were intuitively assumed. To the extent the major or more

likely causes of a certain problem are identified, it ought to be possible to prescribe a set of solutions which would have the potential to either stem or neutralize the causes.

In suggesting solutions, sometimes it is the causes that are addressed and, at other times, it is the problems. For example, in a case like polio, where the damage is already done (one-off cause), the need is to just treat the damage. This is quite different from a case like cancer where until the persistent cause is removed, there can be no remedy. Thus, sometimes the requirement is to control the damage by addressing a problem while, in many other cases, the causes need to be targeted to solve the problem. Therefore, there are possibly three approaches to solve any problem:

- Eliminate or minimize the effect of the cause so as to root out the problem or limit its impact.
- If something has already happened and there is no likelihood of it being repeated, then the approach has to be to address the problem and not the cause.
- If a cause has done the damage and is also likely to surface again, then it is best to address the cause or provide protection against it.

These approaches together can potentially address all possible types of problems. One of these approaches may be more suitable than the others depending on the nature of a particular problem. Each of the solutions generated in this study has its root in one of these approaches.

4.1.3. Survey Findings

The findings of the secondary and primary surveys and focus group discussions were analyzed in two parts: source-wise and component-wise.

In the source-wise analysis, the problems identified from each source for each component were studied rigourously. The objectives were:

- to assess the contributions made by the primary survey and the FGDs to supplement the findings from the secondary survey.
- to identify inconsistencies, if any, in the findings of the three surveys.
- to discover the most critical components in terms of the number of problems.

In the component-wise analysis of responses, only the outputs of the primary survey and the FGDs were studied. Since the discussions were mostly free-wheeling, the objectives were:

- to determine as to how many of the problems relating to a particular component were mentioned by the respondents.
- to discover the most critical components in terms of the number of problems.

4.1.3.1. Source-wise Analysis

Table-4.1 presents the data compiled from the secondary and primary surveys and focus group discussions. For easy reference the component codes are listed in Table-4.2.

Table-4.1: Distribution of Source-wise Problems

Components	Problems	S	P	F	S+P+F	S+P/F	S+P	P+F	S+F	'S'	'P'	'F'
I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**	**X**	**XI**	**XII**	**XIII**
1.1	13	10	12	10	8	1	1	2	0	1	1	0
1.2	11	8	11	8	7	1	1	1	0	0	2	0
1.3	45	27	45	21	19	8	8	2	0	0	16	0
1.4	22	17	20	10	7	9	8	2	1	1	3	0
1.5	18	9	18	1	1	8	8	0	0	0	9	0
1.6	12	8	11	4	3	4	4	1	0	1	3	0
1.7	21	8	21	8	6	2	2	2	0	0	11	0
2.0	88	35	88	31	19	16	16	12	0	0	41	0
Total	**230**	**122**	**226**	**93**	**70**	**49**	**48**	**22**	**1**	**3**	**86**	**0**

Based on the legends mentioned below, it may be noted that the row totals from columns VI to XIII, excepting column VII, add up to the respective figures shown in column II.

Legends

S = Secondary Data (Total) P = Primary Data (Total) F = Focus Group Data (Total)

S+P+F = Data common with S, P, and F
S+P = Data common with S and P
P+F = Data common with P and F
S+F = Data common with S and F

S+P/F = S with either P or F
'S' = S not common with either P or F
'P' = P not common with either S or F
'F' = F not common with either S or P

The following relationships hold true:

S = [S+P+F] + [S+P] + [S+F] + 'S'
= [S+P+F] + [S+P/F] + 'S'

P = [S+P+F] + [S+P] + [P+F] + 'P'
F = [S+P+F] + [P+F] + [S+F] + 'F'

Table-4.2: List of Components

Component Code	Component Name
1.1	Buildings and Constructed Space
1.2	Equipments and Facilities
1.3	Human Resource
1.4	Drugs, Pharmaceuticals and Consumables
1.5	Environment
1.6	Finance and Insurance
1.7	Education and Research
2.0	Administration

A total of 230 problems were identified. The distribution of problems in the various components is shown in columns I and II in Table-4.1. Out of the 230 problems, 53% or 122 already existed in the secondary sources. The problems identified from the primary sources accounted for 98% or 226 of the total. The FGDs generated 93 problems i.e. 40% of the total 230 problems; 70 of these 93 problems were corroboration of problems identified by both the primary and the secondary sources; the balance 23 supported the findings of either the primary or secondary sources. The FGDs did not identify any new problem that had not featured in the findings of either or both the primary and secondary sources. .

Problems in the group [S+P+F] + [S+P] add up to 118. The implication is that 97% of all problems (122) identified from the secondary sources show agreement with the findings of the primary survey. There are only four exceptions. As detailed in Table-4.3, only one of these surfaced in a focus group discussion; the rest three did not find any resonance either in the field survey or the FGDs.

Table-4.3: Identification of Inconsistencies

Observation from Secondary Survey supported by FGDs but not Field Survey	Observations from Secondary Survey not supported by Field Survey or FGDs
• Patients were asked to purchase drugs which ought to have been supplied free of cost.	• Generics were perceived by people as medicines of poor quality. • Norms for health centers were based on population rather than on habitation. • Insured patients were unnecessarily directed to go for procedures like appendectomy, hysterectomy, etc.

The possible reasons for not finding a match are that these were no longer valid and/or these were true only in certain pockets or regions, which were not covered by the primary survey in this study.

The possible reasons for the disparity in terms of the number of problems identified through primary and secondary surveys are that the primary survey was more current whereas the data provided by the secondary sources evidently were dated. The other possibility is that the primary survey in this research covered a more extensive area.

There are 86 problems which were articulated only by the respondents in the primary sources; nearly 50% (41) of these refer to ‘Administration’. It is noted that out of the total 88 problems reported against this component, 47 are from the secondary and/or FGD sources, and 41 emanated exclusively from the primary sources.

A majority of the problems appear to exist in the components, ‘administration’ and ‘human resources’, 38% (88) and 19% (45) respectively. Together, these account for over 55% of all problems. This is true across all columns in the above table. Clearly, the major areas of concern are ‘Administration’ and ‘Human Resources’.

4.1.3.2. Component-wise Analysis of Responses

Table-4.4 shows the total number of responses received vis-à-vis problems relating to each questionnaire from the primary and focus group sources. The details are provided in Appendix III.

Table-4.4: Distribution of Component-wise Responses

Questionnaire	Primary	Focus Group	Total
1.1	20	11	**31**
1.2	28	9	**37**
1.3	257	44	**301**
1.4	43	11	**54**
1.5	53	1	**54**
1.6	30	5	**35**
1.7	46	10	**56**
2.0	254	45	**299**
Total	**731**	**136**	**867**

From the above table it may be observed that across all columns the largest number of responses refer to the components Human Resource (1.3) and Administration (2.0). In the primary sources, larger responses in the categories that followed next seem to be evenly distributed among Drugs, Pharmaceuticals and Consumables (1.4), Environment (1.5) and Education & Research (1.7).

Table-4.5, placed at the end of this chapter, lists the most significant issues identified by questionnaires (Q) in each component of health sector, based on their frequencies (F). The issues considered most significant are those which together share the first 50% of the frequencies from the upper end. Accordingly, the cut-off points are set at aggregated frequencies of 50% or just above, within each component. The base data for this analysis is taken from Appendix III.

4.2. Conclusions

Whereas the secondary sources provided enough data to get started with the research, it is the primary sources that enlarged the bulk of raw data by almost a hundred

percent, extended the scope for a deeper study and analysis, and enriched the content and reliability of the output. The findings present a near exhaustive list of problems that affect the delivery of healthcare services. The components 'Administration' and 'Human Resources,' being responsible for a majority (55%) of problems, appear to be the most critical areas that call for immediate attention of policy makers and program implementers. Also, the significance of primary survey is well illustrated - it not only validated the problems abstracted from the secondary survey but also contributed in expanding the list of problems making it more comprehensive.

4.3. Data Processing and Areas of Focus

The above discussion elaborated on the process followed for data preparation and refinement. It led to a comprehensive list of individual problems, along with their probable causes and possible solutions. The method adopted for further analysis of the data is explained in Figure-4.2.

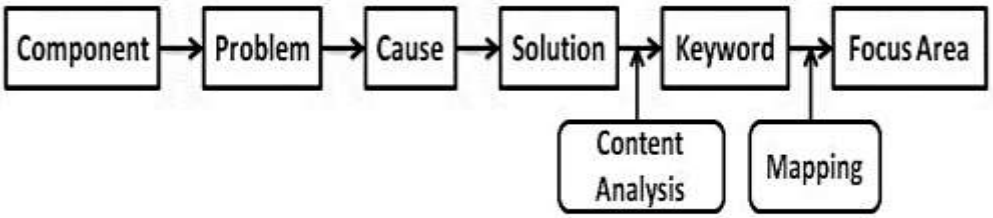

Figure-4.2: Process of Analysis

The objective of the study was to address the problems with a view to either solve them or minimize their effect. Towards this end, each problem, its cause and the suggested solution is looked upon as links in a chain. If a problem is reported to have more than one cause, then there are as many chains as the number of causes. It is the same case if there are multiple solutions. So, if a problem is reported to have two causes and each of these has three solutions, effectively there are six chains emanating from the same problem. Since, eventually the number of chains, or strings, would become too large to handle, it was necessary to group them suitably. Thus, as elaborated later, using the list of solutions as the root, the data was grouped into a few clusters based on the commonality in terms of words or, more importantly, the sense of the phrases used. The purpose was to

club as many strings into one group and end up with as few groups, or focus areas, as fair reasoning would permit.

Beginning with the investigation into eight components of health system, the surveys yielded 230 problems and 623 solutions. The solutions, being the inputs to strategy formulation, are studied in terms of the intent to determine which of these are independent of each other and which ones can be combined together. This is accomplished by applying the technique of 'content analysis'.

4.3.1. Content Analysis

This is a widely used method to analyze qualitative data. Crowley & Delfico (1996) cited Weber and Krippendorff in defining content analysis as 'a systematic research method for analyzing textual information in a standardized way that allows evaluators to make inferences about that information'. The textual information used for analysis consists of discussions, interviews, reports, case studies, etc. It classifies and generates a list of key issues or topics which represent the central ideas in the document. The categories or key issues that are created after the analysis represent a particular group sharing some commonality. These categories must be internally homogenous, exhaustive, and mutually exclusive (Zhang & Wildemuth, 2009). However, sometimes due to intertwined nature of the collected information like human experiences, it is not possible to get such non-overlapping categories (Graneheim & Lundman, 2004). The process of content analysis involves reading and re-reading the data to understand the sense of the meaning. Culling out keywords or issues from the textual information, is based on the words that characterize the content of the data. This is followed by grouping the identified keywords or issues into 'themes' or tying them by a common thread called 'themes'.

Elo et al. (2014) cited Lincoln and Guba in stating that content analysis is evaluated, just as any qualitative research, based on its credibility, dependability, conformability and transferability. As cited by Cohen and Crabtree (2006), these are similar to the evaluation criteria mentioned by Miles & Huberman (1994) for any qualitative research.

Content analysis has been widely used in various disciplines like psychology, political science, social sciences, communications, nursing studies, etc. Popular computer programmes are also available to assist in performing content analysis like Atlas Ti and

NUDIST. However, when there is latent content embedded within the textual information, that is, when it is required to interpret the underlying meaning in the data collected, then manual analysis is the preferred choice (Sandström, Willman, Svensson, & Borglin, 2015; Webb, 1999).

In the present research it was necessary to understand the underlying meaning embedded in the data and therefore manual analysis was the preferred choice. Keywords were identified from the list of solutions. These keywords were either the words that appeared in the solution or those that conveyed the same meaning as did the solution. Sometimes, several keywords were assigned to one solution and, at some other times, more solution than one was represented by the same keyword. The list of keywords was condensed by grouping those which appeared related to each other. For example, participation, active participation, community participation, and user participation were combined into 'community participation'.

The solutions which numbered 623 were reduced to 50 key words, which together appeared 923 times. Table-4.6 lists the keywords identified through content analysis.

Table-4.6: List of Keywords

Keywords	(η)	Keywords	(η)
Execution	136	Appraisal	8
Planning/Autonomy	137	Transparency	8
Training	73	Efficiency	8
Awareness	46	Performance	8
Commitment	43	Evaluation	7
Policy	38	Feedback	7
Monitoring	34	E-Governance	6
Supervision	26	Survey	6
Finance	24	Ownership	5
Corruption	23	Guidelines/Protocols	5
Attitude/BCC	23	Leadership	5
Participation	22	Education	5
Human Resource	20	Fairness	4
Coordination	17	Capacity Building	4
System	16	Mindset	4
Regulation	15	Postings	4
Recruitment	14	Audit	4
Salary	14	Review	4

Table-4.6: List of Keywords (Contd.)

Infrastructure	13	Deployment/Distribution	3
Political/Government's Will	13	Legal	3
Restructuring	12	Teamwork	3
Punishment	12	Communication	3
Accountability	10	Incentives	3
Resources	10	Inspection/Checks	3
Information Technology	9	Orientation	3

Total Keywords=50; Total Frequency of Keywords (η) =923

In the next step, these keywords were used in the process of 'mapping' to identify the areas of focus for the strategy.

4.3.2. Mapping

Mapping is a process by which elements of one set of information are logically related with the elements of a smaller set of information. To start with, the elements of the first set are always known. In the present case the solutions constituted the first set and each solution was an element of this set. The nature of the second set is decided based on the purpose of mapping. In the present case, areas of focus were the second set. At this stage the problem was reduced to identifying the elements of the second set such that each of these might be logically related to some of the elements of the first set and all of them together would be exhaustibly related to all the elements of the first set.

The list of keywords was analyzed to discover the family of words/themes that appeared frequently. Several such clusters were identified, which together covered all the key words. The output of mapping was 'focus areas'. These are listed below.

- Governance – Planning
- Governance – Execution
- Human Resource
- Public Awareness & Community Participation
- Corruption
- Finance
- Attitude
- Coordination

It is important to note that often there are multiple causes and multiple solutions applicable to each problem. Also, as described above, for each solution there are one or more keywords applicable to it and therefore, the same solution could be tagged to one or more of these focus areas.

All these areas of focus will have to be taken into account while formulating the strategies. By doing so, it would confirm its potential to address all problems identified in the study.

4.3.3. Analysis of Mapping Outputs

Considering the solutions as the basis, the components were analyzed vis-à-vis the focus areas to ascertain as to how each focus area was fed by solutions from which components. Figure-4.3 shows the mapping of components on to the eight focus areas. Table-4.8 presents the distribution of solutions by focus area and component.

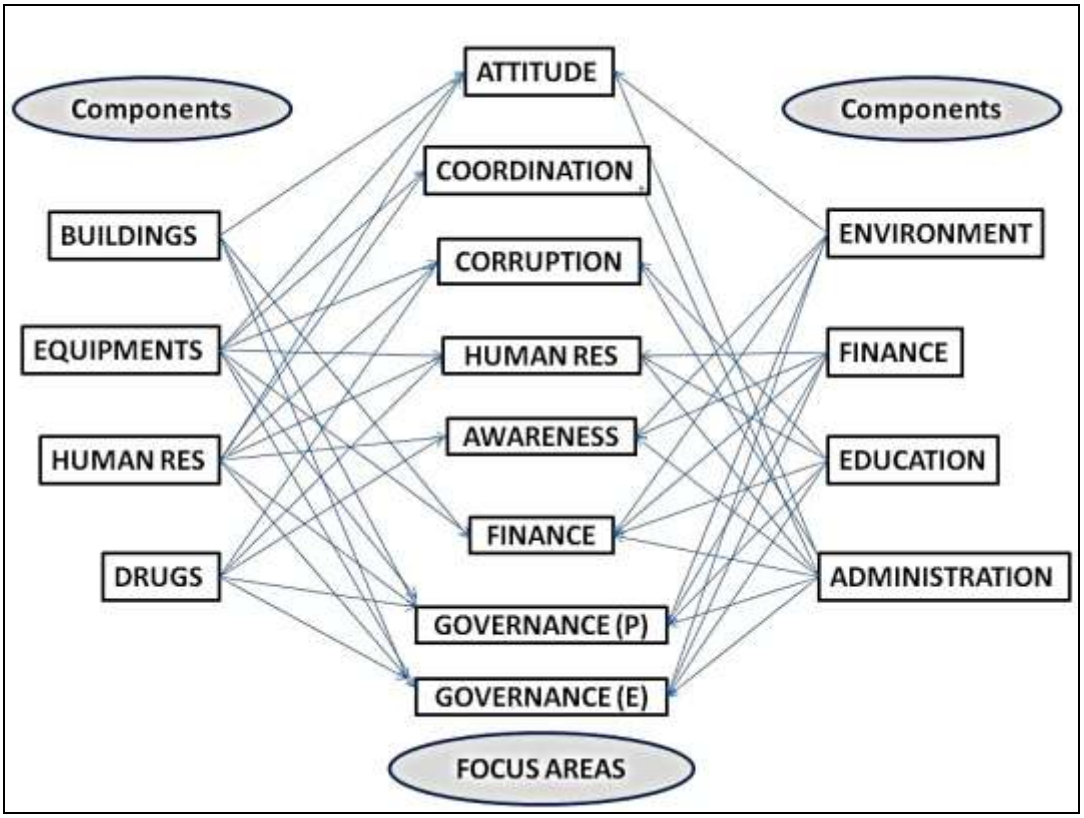

Figure-4.3: Mapping of Components onto the Focus Areas

Table-4.7: Distribution of Solutions by Focus Area and Component

Focus Areas / Components	Attitude	Corruption	Coordination	Human Resource	Finance	Governance-Planning	Governance-Execution	PACP*	Total
Buildings and Constructed Space	1	–	–	–	4	4	14	–	23
Equipments and Facilities	2	2	1	1	4	7	14	–	31
Human resources	9	8	1	74	–	68	88	1	249
Drugs, Pharmaceuticals and Consumables	–	4	–	5	–	9	33	4	55
Environment	5	–	–	1	1	3	20	28	58
Finance and Insurance	2	–	–	3	7	11	8	3	34
Education and Research	–	8	–	11	4	24	11	–	58
Administration	5	12	15	31	2	89	62	17	233
Total	**24**	**34**	**17**	**126**	**22**	**215**	**250**	**53**	**741**

* Public Awareness and Community Participation

An ABC analysis of solutions by focus area, as shown in Tables-4.8, reveals that Governance-Planning and Governance-Execution are the A-items representing approximately 63% of all solutions. Human Resource is the B-item, and the rest of the focus areas belong to the group of C-items.

Table-4.8: Focus area wise solutions (Absolute and Cumulative)

S. No.	Focus Areas	Absolute Number	Cumulative Number	Absolute %	Cumulative %
1	Governance Execution	250	250	33.7	33.7
2	Governance Planning	215	465	29.0	**62.8**
3	Human Resources	126	591	17.0	**79.8**
4	PACP*	53	644	7.2	86.9
5	Corruption	34	678	4.6	91.5
6	Attitude	24	724	3.2	97.7
7	Finance	22	700	3.0	94.5
8	Coordination	17	741	2.3	100.0

* Public Awareness & Community Participation

The implication is that the areas of governance (planning and execution) and human resource deserve greatest attention in devising of the strategy. This finding, based on the distribution of solutions among the areas of focus, also confirms the earlier observation made in the previous chapter where administration and human resource were identified as the most critical areas from the view point of the distribution of problems among the components.

4.3.4. Discussion on the Areas of Focus

All areas of focus are discussed here in the sequence of their aggregate number of solutions. The discussion on 'governance' includes the aspects of planning as well as execution.

4.3.4.1. Governance

In an oft-cited quote, former UN Secretary-General, Kofi Annan, noted that "good governance is perhaps the single most important factor in eradicating poverty and promoting development" (Gisselquist, 2012).

Governance is a key component in health system development (Siddiqi, Masud, Nishtar, Peters, & Sabri, 2009; Sudarshan, n. d.; WHO, 2007). With increased emphasis on the strengthening of health systems, effectiveness in governance assumes greater import.

Governance is concerned with the functions of overall direction and laying down of rules by the government/policymakers/decision makers, as they attempt to achieve the objectives of the national health policy, consistent with realizing the broader goal of health for all. Despite growing attention and interest in the concept of 'governance', a universal definition for the term is yet to emerge (Siddiqi et al., 2009). Different organizations have made attempts to define the term 'governance' (McCawley, 2005). The United Nations Development Programme (UNDP) (1997) defined it 'as an exercise of economic, political and administrative authority to manage a country's affairs at all levels'. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. To put it simply, it involves the process of decision-making and

the process by which decisions are implemented (or not implemented). In governance, the government is not the sole stakeholder. It also includes legislature, judiciary, media, social organizations, civil society, political parties, etc.

Broadly, governance in the context of health encompasses:

- Providing a strategic direction towards development of policy and its implementation
- Creating systems that detect and rectify any undesirable trends and distortions
- Affirming the case for health in national development
- Regulating a wide range of actors
- Establishing transparent and effective accountability mechanisms
- Collaborating with all stakeholders, actors and users to promote and maintain health in an inclusive and participatory manner

Governance also includes maintenance of law and order, administration of justice, and welfare of economically and socially weaker sections of society in terms of providing of a safety net for them. The scope of governance ranges from the national to regional and local authorities.

The available literature, mainly the Commission on Human Rights, the World Bank, International Development Association (IDA), Asian Development Bank (ADB), UNDP, etc., explain the key attributes or elements of governance as follows (International Fund for Agricultural Development, 1999):

- **Participation:** All people (men and women) should have a voice in decision-making.
- **Rule of Law**: It requires enforcement of laws fairly.
- **Transparency:** Information must be allowed to flow freely such that the processes, institutions and information are directly accessible to those concerned. The information must be sufficient and easily understandable.
- **Responsiveness:** Institutions and processes should serve all stakeholders.
- **Consensus Orientation:** Good governance should mediate differing interests in order to reach broad consensus in the best interests of the group.
- **Equity:** All men and women should have equal opportunity to maintain or improve their well-being.

- **Effectiveness and Efficiency**: The systems in place should produce results that meet the needs of the society while making the best use of resources.
- **Accountability**: Decision-makers in government, private sector and civil-society organizations should be accountable to the public as well as to institutional stakeholders.

Governance can be labeled as 'good' based upon the extent to which it delivers what was promised to the people. 'Good governance' relates to political and institutional processes and outcomes that are deemed necessary to achieve the set goals. It embodies much more than just administrative reforms and government, as the conventional meaning implies. Kaufman and Kraay (2003) defined good governance as 'the traditions and institutions by which authority in a country is exercised'. Kaufman, Kraay and Mastruzzi (2009) mentioned six dimensions of governance: voice and accountability, political stability and lack of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. These are similar to the eight characteristics of good governance described by the United Nations Economic and Social Commission for Asia and the Pacific [UNESCAP] (2009), as shown in Figure-4.4.

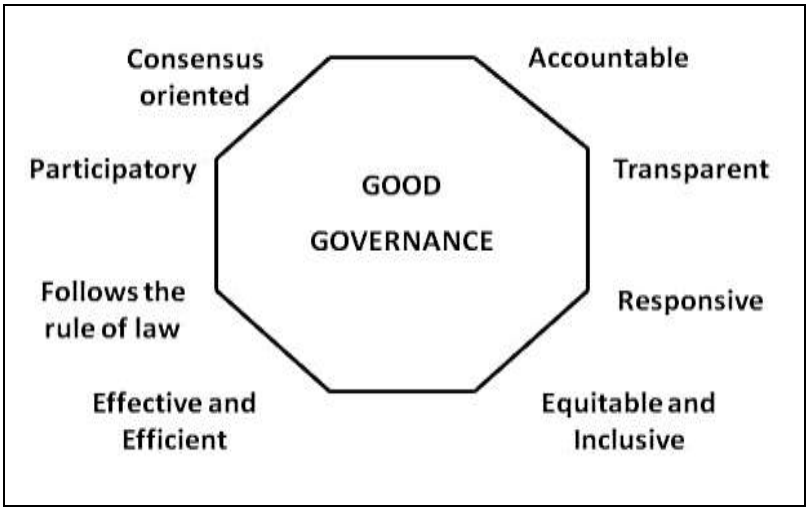

Figure-4.4: Dimensions of Good Governance

Note. From "What is Good Governance", 2009, UNESCAP

All these dimensions/characteristics of governance affect the environment within which healthcare services function (Maureen, 2007).

There are aggregate indicators for measuring governance, but there are no indicators to measure governance specifically for the health sector. As a result, quantifying or measuring the level of governance in the health sector becomes difficult. The center for good governance has suggested a framework for assessing the quality of governance ("Framework for Assessing State of Governance-a Toolkit", n. d.). The framework consists of 164 indicators based upon principles of governance. Kaufmann and Kraay (2008) distinguished between the rules-based and outcomes-based governance indicators. The former described the existence of regulations, procedures, etc., and the latter measured the extent to which these rules and regulations were implemented. Savedoff (2011) distinguished between indicators that measured governance determinants from those that measured governance performance in order to propose a framework that was analytically coherent and empirically useful.

Hammer, Aiyar, & Samji (2007), mentioned that poor accountability and low voice between the public sector and users of the healthcare system act as constraints to effective delivery of health services. A study by the Rockefeller Foundation (Balabanova et al., 2013) found that good governance was one of the attributes which aided in achieving better health outcomes and improvements in health.

Healthcare services require effective usage of the available resources namely, financial, manpower, etc. To achieve this efficiently there has to be a 'system' in place (Maureen, 2007). The backbone of such a system has to be good governance and management.

Ciccone, Vian, Maurer, & Bradley (2014), reviewed the literature on the association between governance and health outcomes. They observed that most of the studies found a positive and significant association between the two. They also highlighted the mechanisms by which health outcomes might be affected by governance. These were decentralization which impacted on the responsiveness of the system to local needs, the process of making decision and policy - the more participatory and transparent the better the health outcomes, greater community engagement and strengthened social capital.

There exists substantial evidence to show that basic public services and programmes (such as those meant for the poor and the disadvantaged) function relatively inefficiently in the poorer and less well-governed states, which strengthens the case for improving governance. The importance of governance in tackling the issues of poverty

and human development has been highlighted in the Five Year Plans. Recognizing its role, the government made the 73rd and 74th constitutional amendments and granted constitutional status to the PRIs and the ULBs. If rightly implemented it does have the potential to bring about decentralization and make the system much more responsive, accountable and closer to the people. Further, article 243 A of the Constitution states that Gram Sabha is the main body responsible for all powers and functions devolved on Panchayats, and it is expected to function almost like a legislature. The various states, however, have provided only supervisory powers to Gram Sabhas, without giving them any effective control over the elected Panchayats.

The need of the hour is a more meaningful training and generating of awareness among the PRI members, government officials and the community, to highlight the role and responsibilities of each. Also, it must clearly demarcate the functions applicable with respect to each of the three tiers of government i.e. center, state and the local level.

There are papers and studies recommending policies and strategies to improve governance, though not specifically pointing to health. (Chartered Institute of Public Finance and Accountancy & the International Federation of Accountants, 2013; The Institute of Internal Auditors, 2012; World Bank, 2000). Some of the measures suggested for improvement are: monitoring of performance, better appraisal systems, auditing, enhancing answerability, etc. (Maureen, 2007). At present a lot of emphasis is being put on e-governance and it is believed that this will have a greater potential to identify issues of ineffective governance, and that can become the bedrock for better control and improvement.

E-governance is defined as the use of Information and Communication Technology (ICT) for automation of operations within the government and its interactions with users and other stakeholders involved in the planning and delivery of healthcare services (Ray & Mukherjee, 2007). The potential benefits of e-governance are effective and efficient delivery of services, greater accountability and transparency, better two-way communication and sharing of information, and improved resource planning and utilization. Out of 117 countries, India's position in the e-readiness index and e-participation index, carried out by the UN Department of Economic and Social Affairs (DESA) (2005), was 87 and 34, respectively in its UN Global E-government Readiness Report. The reasons cited for its poor ranking were the lack of telecommunication infrastructure, irregular electricity supplies and the high cost of telephones and internet

relative to the per capita income, low literacy levels, inadequate regulatory framework, etc.

At a time when India has committed to provide Universal Health Coverage and increase the funding to almost 3% of GDP, it is all the more important to first upgrade the existing system which will eventually use the enhanced resources. A dysfunctional or inefficient system may again lead to leakages and ineffective output. It makes little sense to put more resources into a system which is already functioning at a sub-optimal level.

Some of the key areas impacting governance are: strengthening of decentralization, reforms at institutional and administrative levels and greater exploration of e-governance in public system. Manifestly, there is a need to empower PRIs and Gram Sabhas, to ensure transparency, accountability, productivity, fairness in appraisals, etc., so as to pave the way for improved efficiency and effectiveness of public institutions in the health sector.

4.3.4.2. Human Resources

Healthcare by its very nature is a human resource intensive sector. No amount of investments and advancement in technology can totally replace an efficient health workforce. That is what makes human resource a critical element of a health system. The density of health workers, especially doctors, nurses and midwifes has much to do with better health outcomes (Bhutta, Lassi, Pariyo, & Huicho, 2010). The shortage of health workers has been unequivocally accepted as one of the key constraints in providing essential, life-saving interventions such as immunizations, safe pregnancy and childbirth services, and access to treatment for diseases like AIDS, tuberculosis, malaria, etc.

Time and again, the planning, development and training of human resource have been identified as the key areas in health sector (Global Health Workforce Alliance, 2008). The implied domains are education, training and development, emigration, financial packages, appraisals, motivation, career paths, etc.

At this stage there are two issues that require attention. One, it is necessary to know at all times the existing and estimated gaps between the requirement and availability of manpower at various levels. Nothing short of a country-wide periodic survey and levelheaded analysis can help in providing this information on a regular basis. Any piecemeal approach or protracted survey would be only an effort, without much

meaningful return. Without this basic real time data, there is no way the periodic recruitment and placements, as the present practice is, would take the sector anywhere near a permanent solution. Often the manpower at hand is criticized for its poor abilities or commitment. These are the general views of the immediate supervisors. Perhaps, the likely reasons for such assessments are their own inability to get the work done by the subordinates or a secret desire to fish for larger complements of staff.

Two, there is also a need to carry out periodic studies on job evaluation. Over time the contents of jobs change and so do their value. A detailed and meaningful study would be able to highlight the worth of each type of job in the healthcare services, and determine the appropriate salaries and benefits so that compatibility could be ensured between the demands of a job and its rewards. It would also help to provide a basis for carving out for the juniors certain aspects of jobs that the seniors do today. This would be motivating for the juniors and increase their worth. At the same time, the seniors would be relieved from doing what some juniors would be able to do with equal élan, and release them to take up higher value tasks that only they could do.

The nature, quantity and quality of work expected of anyone over a given period of time ought to be arrived at in consultation with the supervisor. Only then it could become a meaningful target for the supervisor to evaluate. Actual performance being better or worse compared to the expected, ought to attract commensurate action. Job descriptions, which essentially focus on the nature of work and the specifics of tasks, are quite different from setting up of targets. Targets focus on the expected performance of subordinates in terms of the nature, quantity and quality of output over a specific period. This suggestion may at first appear to be impractical, or even un-implementable, but such perceptions have their root in what has been the usual practice forever in the past. Any change from a common practice is always fraught with the feeling of suddenness and therefore, may tend to generate emotions of the extreme kind.

Referring to Maslow's theory of 'hierarchy of needs' (Huitt, 2007), it should be obvious as to why despite the increases in salaries, the government has not been able to get improved output or commitment from its employees. Employees do not see any reason or need for a motivated performance in lieu of increases in salaries, which they consider as a given. The feeling of gratification does not last long for it quickly loses its newness and often gets offset by the effects of inflation. Evidently, money is not the greatest motivator (Katzenbach & Khan, 2010; Premuzic, 2013; "The Most Powerful

Workplace Motivator", 2011). The solution lies in focusing on other basic needs. These may include working environment, respect, freedom on the job, etc.

In a study, motivational factors other than monetary rewards, were identified as the availability of resources and infrastructure, opportunities for continuing education and career development, recognition and appreciation for good work, etc. (Zurn, Dal Poz, Stilwell, & Adams, 2004). Another study conducted in Chhattisgarh brought to light the reasons as to why some doctors preferred to serve in the rural areas (PHFI, NHSRC, & SHRC, 2010b). The reasons were an affinity for working in village environment because of having been brought up there; opportunity for spouses to work at the same place, hope of getting permanence in the job, etc. Apart from these enabling factors, unmet needs of such workers were also mentioned, like better opportunities for education of children, safety and security and better housing facilities. A favorable environment boosts the desire to perform. When an employee spends a good part of his life at a workplace, it is easy to see that a comfortable environment is a necessary condition for him to perform, given his knowledge, abilities and experience.

A fair and realistic appraisal can keep employees motivated. It has to be carried out with honest interest and involvement and not done perfunctorily as is often the case. The process has to be seen as transparent. When the future of the subordinates remains in the hands of the superior, the latter also has an obligation to be fair to them. In that respect, there is some merit in reverse appraisals, now commonly known as the 360 degrees evaluation.

Security in jobs, in a way takes away the motivation to perform. Therefore, in the public sector, not doing any work appears to have become a safer option to continue in the job rather than attempting to do what is required and accept the risk of failure.

Continuing training and development, besides helping to upgrade the competence, is also a motivator. The effects of training add up and may last long if the employee is provided the opportunity to apply the newly gained knowledge and further hone his skills. Training, therefore, has to be viewed as an investment with its potential to offer return over a period. The government must factor in training, in estimating the demand for manpower and planning its deployment. Planned and effective training are useful for an organization in more ways than one. Training sessions are an opportunity to meet new people, share experiences and learn from others. It can be rejuvenating and motivating for the trained person to perform more effectively after he gets back to his job. He finds

himself better placed to disseminate knowledge, and may even become a resource person to train others.

Motivation, appraisal and training can contribute substantially towards upgrading the quality of an employee. The framework in Figure-4.5 explains how these are inter-related.

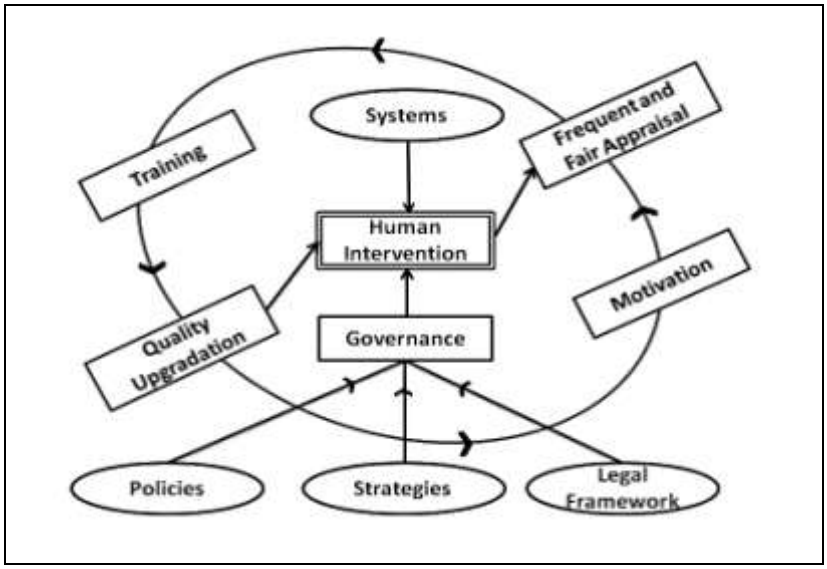

Figure-4.5: Improving the quality of human intervention

To sum up, the broad areas to work upon are ensuring good working conditions including safety, frequent and fair appraisals, provision for pre-service and in-service training, etc. It is also meaningful to establish suitable data management systems, install effective reporting mechanisms, and ensure accountability. Measures towards these have already been initiated, as recorded in the document on UHC, India (Planning Commission, 2011a).

4.3.4.3. Public Awareness and Community Participation

The significance of public awareness and community participation is specified in Alma Ata Declaration, 1978, as '…the people have the right and duty to participate individually and collectively in the planning and implementation of their healthcare' (Report of the International Conference on Primary Healthcare, 1978).

The strategy of 'Health for All' also specifically emphasized the potential of community participation in improving health (WHO, 1991). Community participation implies participation of the general public in various activities of the sector viz. planning,

service delivery, monitoring and supervision, evaluation, etc. Sustaining of improvements in health requires healthy attitude beyond mere participation.

Establishing any direct relationship between community participation and health outcomes is not easy. However, being a tool of empowerment, community participation can generate the greatest impact on health as it targets the local factors causing ill health (Wallerstein, 2006). The participatory approach is more time consuming but it does have a positive and sustainable impact in the long term (Dolan & Levinson, 2000). There are examples to support the case of community participation such as the SEARCH project in Gadchiroli, Kerala Water Project, etc. (WHO, 2004).

Some of the factors that enable a community to participate are, the recognition of the right given by the government to people to participate, installing a system that promotes decentralization, availability of a responsive and committed cadre of health workers, effective information and communications network within and between the community and the government, etc. (Murthy & Klugman, 2004). Elements in a community that are critical to participation are: knowledge about health, planning and management skills, facilitative leadership and communication skills, and a commitment to collaborate. In the case of health workers, the critical elements are knowledge about the community, credibility to provide service, planning, communication and collaboration skills, together with facilitation and mentoring skills (Aubel, 2001).

There are four levels of participation: low, moderate, high and the highest (Aubel, 2001; Rifkin, Muller, & Bichmann, 1988). Level 1 is the least participatory and least complex to implement and level 4 is the most participatory, where the community takes a lead role in planning and implementation. While all health programmes must strive to achieve the highest level, it may not always be possible, for example, in emergencies or in epidemic situations.

It is absolutely essential that, at all times, people are kept informed about the various health programmes and all that they are rightfully entitled to demand from the healthcare facilities in the government sector. When that happens, people will feel empowered to hold the government accountable for substandard or denial of service, should an occasion so demand. For the successful implementation of any programme, it is important that all stakeholders, including the community, participate in it. Unless the public is involved, sustainability will remain a distant dream. In the guidelines of 'NRHM - Framework for Implementation' (MoHFW, n. d.), the Ministry of Health and Family

Welfare declares that ‘the community should emerge as active subjects rather than passive objects in the context of the public health system’.

MoHFW has several provisions for engaging the community in health programmes like, ASHAs, Village Health and Sanitation Committees (VHSCs), RKSs, etc. Broadly, these are called ‘community processes’. ASHAs are volunteer workers chosen from the community to work as link workers between the health system and the community. VHSCs are committees, comprising village Pradhans, PRI members, ASHAs and ANMs, which are responsible for engaging the community in the planning process. RKS, a facility-based committee, has representatives from the community, who are actively involved in monitoring. All of these enhance people’s participation in service delivery and help in mobilizing the community to access their entitlements. The performance of all of these would depend on the capacity, competence, ownership, etc., of the people in these committees. Some studies have identified certain lacunae in the effectiveness of these community processes.

Countries often develop posters, flyers, leaflets, brochures, booklets and messages for health education sessions, radio broadcast or TV screenings, etc., as a means of promoting the desirable positive behaviors in the community. These initiatives are commonly referred to as IEC activities (“Information, education and communication”, 2015). The three components of IEC are:

- **Information**

  It includes the activities relating to the generating, processing and disseminating of information, which is proposed to be shared among various stakeholders at different platforms, for greater effectiveness in programme management. Also, included in it is the setting up of the best practice documentation system, which would eventually help in the preparing of the strategy and disseminating information about the success stories and good practices.

- **Education**

  Education is a process of learning through which a person gains knowledge and understanding of a subject. It comprises capacity building activities of officials at various levels and the public at large, for better implementation of the activities. This includes participatory activities at the grass root level, and training of various types.

- **Communication**

  These activities are concerned with the understanding of the needs of interaction and publicity within and among the communities, as well as developing of various tools to disseminate information using appropriate channels.

While designing the tools for enhancing public awareness it is important to take into consideration the variables like the profile of the target audience, type of media, local cultural issues, language, etc. Before getting down to designing IEC activities, it is absolutely essential to conduct baseline surveys in respective areas.

Various studies point to the fact that the masses are generally not aware of the healthcare provisions and their own entitlements. This gap in information can be addressed only by a structured IEC program. Interventions through these programmes must facilitate awareness and dissemination of information about the availability of healthcare services, prevention of certain diseases, desirable day-to-day practices for maintaining good health, etc. The core objective should be to encourage health-seeking behavior that is feasible in the context in which people live. Interventions at interpersonal levels should be so designed that the generated awareness may get translated into action. To achieve this, behavior change communication (BCC) activities need to be launched, in addition to the IEC activities.

It is also important that people act as responsible citizens and assist the government in ensuring overall wellbeing of the society. Broader social determinants of health can be effectively targeted only through community participation. In a country like India, which is the second largest democracy and consists of peoples of diverse religions and beliefs, it is only through public awareness and community participation that the 'health for the people, by the people and to the people' can be realized.

4.3.4.4. Corruption

Srivatsa Krishna, an IAS Officer (2013), made a pertinent statement that 'no amount of deregulation, removal of discretion and introduction of technology was a substitute for sound human character.'

Christopher Potter (2010), an ex-programme manager, health and family welfare programme, European Commission, labeled corruption as the biggest killer in India that marred the country's healthcare system.

Corruption, with its pervasiveness particularly in the government set-ups, unfortunately has become almost socially acceptable. It is not confined just to the health sector but has spread far beyond it, making it now a systemic problem (Solberg, 2008). Corruption affects the health outcomes negatively, and leads to the degradation of the health system in developing countries (World Bank, 2004). While some degree of corruption exists in almost all countries, it is the developing countries where it turns critical because the resources there are already scarce (Vian, 2002). Gupta, Davoodi, & Tiongron (2000) cited a study conducted by the International Monetary Fund (IMF), where it was found that the countries with high indices of corruption exhibited systematically higher rates of infant mortality. Nordberg (2008) in a report titled 'corruption in the health sector' observed that corruption ruined the relationship between patient and doctor, lowered the effectiveness of healthcare services, increased the costs and decreased the volumes of services provided.

Much of the corruption that exists in the health sector is a reflection and result of the systemic weaknesses in governance and accountability (Vian, 2008). The corrupt practices range from informal payments to kickbacks to abusing investigations. Nordberg (2008) also observed that budgeting, pricing, procurement of drugs and medical supplies, etc., were possibly the primary sources of corruption.

It is estimated that approximately 10 percent to 25 percent of total global spending on healthcare is lost because of corruption (Transparency International, n. d.). The nexus between politicians, businessmen and bureaucrats in this respect is well documented. A sizeable portion of the funds paid towards investments and expenses finds its way into the pockets of these avaricious groups. Project costs overshoot budgets; value for money is lost in transit; expenses do not get fully utilized; individuals, groups and businesses get richer at the cost of the general public, who continue to suffer as a result of delayed projects, inefficiencies in the production of goods and services and grossly unequal distribution of wealth – all despite substantial resources at command and good intentions of the government. The root cause of all this is corruption and the inability of the public to jointly raise its voice against the corrupt politicians, businessmen and bureaucrats.

The absence of rigid standards, low citizen involvement and ineffective auditing provides an environment where corruption can thrive. While it is not easy to quickly eradicate corruption, several suggestions in this regard have been made (Jain, Nundy, & Abbasi, 2014; Zodpey & Negandhi, 2008). Nandan Nilekani (2014), Infosys co-founder, had mentioned that corruption could not be controlled by providing more laws (anti-corruption), more police force, or even more ombudsmen. Better alternatives were reducing monopoly and discretion; and increasing accountability. Christopher Potter (2010) highlighted the fact that the medical professionals had to first stem the rot from amongst themselves, and then take steps to set right the other categories of personnel involved in the delivery of healthcare services. He mentioned that the MCI together with the support of other associations must themselves follow the code of ethics before they set about to curb unethical practices in the medical profession. A report titled 'Corruption in the Health Sector' (Nordberg, 2008) identified the scope for corruption in the process of preparing budgets, and emphasized the need for greater transparency in that exercise, besides monitoring of the expenditure management systems, tracking of public expenditure, putting effective audit systems in place and encouraging public participation. Table-4.9 illustrates anticorruption efforts based on the incidence of corruption and the quality of governance, as suggested by Huther and Shah (1999).

Table-4.9: Effective Anti-Corruption Programs based on Governance Quality

Incidence of Corruption	Governance Quality	Priorities of Anti-Corruption Efforts (based on drivers of corruption)
High	Poor	Establish rule of law, strengthen institutions of participation and accountability; limit government interventions to focus on core mandate
Medium	Fair	Decentralization and economic policy reforms; results-oriented management and evaluation; introduction of incentives for competitive public service delivery
Low	Good	Explicit anti-corruption programs such as anti-corruption agencies; strengthen financial management; raising public and officials awareness; 'no bribery' pledges, etc.

Note. From Anti-corruption policies and programs: a framework for evaluation, p. 12 by J. Huther & A. Shah, 1999, World Bank Publications.

To conclude, some of the suggested strategies to tackle the issue of corruption are, *inter alia*, greater transparency, strict monitoring, regular external auditing, proactive and vigilant civil society, effective use of the RTI act, and enforcement of legal provisions and prompt redressal of grievances.

4.3.4.5. Finance

Finance is one of the key functions of a health system identified by the World Health Organization (WHO, 2010). It broadly includes mobilization of resources, its allocation and distribution. To make an assessment of the health system in terms of equity, access and quality, it is important to understand all that health financing implies.

A health system is financed by public, private or donor sources. Public source is the government that funds the system through taxes, grants, fees and loans. In most of the developing economies private source is an important avenue of finance for health. The households and employers, who pay service providers directly or indirectly in public and private sectors, and insurance premiums, form the private sources. Private expenditure is mainly in the form of out-of-pocket (OOP) expenditure by households (Garg & Karan, 2009). In many developing countries, the private OOP forms a major and important source of health financing. Grants, loans and in-kind contributions are ways of financing the health system by the donors. The National Health Accounts (NHA) is a document published by the Ministry of Health and Family Welfare, detailing the health expenditure in India. The latest one, though not quite recent, was prepared in the year 2004-05. Table-4.10 shows the percentage share in healthcare spending of different sectors in India. With the share of households being the largest at over 70 percent, clearly the efforts of the government have not been adequate.

Health financing includes the allocation and utilization of funds, and the systems for its monitoring and control. An analysis of the current scenario showed that the states were not able to fully utilize the funds available to them or translate these into better health outcomes (George, 2011). It was noted that despite political commitment from the central government and increased funds mobilization, the states had failed to effectively implement the health schemes (Berman & Ahuja, 2008; Duggal 2009). It was, therefore, important to review the causes of poor absorption, and assist them in improving their utilization of funds by way of effective execution of health schemes. The most important

reasons cited for this weakness were poor managerial or public health expertise, and the overburdening of primary healthcare centers with the implementation of several vertical programmes (Kumar et al., 2011).

Table-4.10: Percent share in healthcare spending in India

Sector	% Spending
Household	71.13
State Government	11.97
Central Government	6.78
External Flow	2.28
Social Insurance Funds	1.13
Firms	5.73
Local Bodies	0.91
NGOs	0.07
Total	100.00

Note. From "National Health Accounts", p. 3, by MoHFW, 2004-05

A review of the states with respect to healthcare financing and health outcomes showed a mixed picture. Southern states on an average seemed to perform much better than their northern counterparts. Tamil Nadu, one of the better performing states, showed much better commitment even towards the sectors related to health like nutrition, water and education than a state with poor health indices such as Madhya Pradesh. Clearly, states' investments in non-health sectors also played an important role and impacted on health outcomes (Kumar et al., 2011).

The recommendations for health financing and financial protection, as suggested by the High Level Expert Group (HLEG) (Planning Commission, 2011a), were:

- to increase the health expenditure to 2.5 percent of GDP by the end of the 12th Five Year Plan and to 3.0 percent of GDP by the year 2022,
- use general taxation for financing healthcare,
- ensure availability of drugs at public health facilities by increasing the public spending on drug procurement from 0.1 percent to 0.5 percent GDP, and
- increase flexibility in allocation of funds so that the states might respond to various differentials and diversities, etc.

The increase of healthcare expenditure to 3 percent GDP had been advocated in many other studies and reports as well (MoHFW, 2005; Planning Commission, 2006b; Planning Commission 2006c). It was suggested that the states be provided some incentives as a reward for efficient usage of funds, commensurate with improved health outcomes, and take into account their fiscal deficit when allocating funds to them (Kumar et al., 2011).

It can be concluded therefore that besides raising public health spending, it would also be necessary to simultaneously bring about improvements in regulatory framework, accountability, monitoring, and supervision, to ensure better efficiency in spending, quite apart from improving the quality of services.

4.3.4.6. Attitude

Attitude has been defined as a 'settled way of thinking or feeling about something' ("Attitude", n. d.). It relates to a particular state of mind or a tendency to act in a particular manner based upon previous experiences or individuals' temperaments. The attitude of a person can affect his behavior favourably or unfavourably. Studies have shown a positive relationship between attitude towards work, organizational commitment, and job satisfaction. Susanty, Miradipta & Jie (2013) cited Carpeter et al., that there were certain elements which influenced attitude towards work, namely personality, person-environment fit, job characteristics, organizational justice, work relationship, stress, etc. Other factors like literacy level, family background, compensation, performance appraisal, promotion practices, etc., also had a bearing on the attitude of a person towards work and broadly towards life. Understanding employee attitudes and behaviors was important because these affected the organizational effectiveness and profitability.

Attitude includes three components namely, feeling, belief or thought and behavior or action, together called the tri-component model ("Attitudes, Attributions and Social Cognition", n.d.). Although, it requires time, determination and effort, it is possible to transform attitude (Pickens, 2005). For changing the attitude of a person/people, it will be a folly to believe that the change can occur in just a few days or even months. It may take much longer than that and may take years or even decades. No matter how long it

takes, it should not deter one from working towards bringing about desired changes in attitude.

To a large extent, issues arising out of poor attitudes can be largely controlled if only proper systems are in place. Systems require human intervention both in designing and implementation but they restrict the room for discretion, and demand compliance. Given proper systems, people would still be needed for governance but their roles would get curtailed. Once discretion is justifiably trammeled, there would be much less room left for corruption as well. The best of efforts with the best of planning would still need robust systems for effective performance.

4.3.4.7. Coordination

The outcomes in health depend on the synergistic working of various departments, ministries, their programmes and schemes. The importance of coordination is mentioned in the Alma Ata Declaration as well (‘Declaration of Alma-Ata’, 1978). One of the key strategies in primary healthcare is inter-sectoral collaboration. To achieve its goals, Article VII of the Alma Ata Declaration (1978) emphasizes the need for sectors other than health such as food, agriculture, education, housing, etc., to coordinate their efforts. A concept of ‘Inter-sectoral Action for Health’ is being promoted by the WHO. It has been defined as ‘the recognized relationship between part or parts of the health sector with parts of another sector which has been formed to take action on an issue to achieve health outcomes (or intermediate health outcomes) in a way that is more effective, efficient or sustainable than could be achieved by the health sector acting alone’ (Inter-sectoral action for health: a cornerstone for health-for-all in the twenty-first century, 1997).

The health sector today faces myriad of problems. They are much more complex and multidisciplinary in nature, and often beyond the scope of health system alone to address (WHO, 2002). Many of the solutions to the underlying determinants of health and disease lie in sectors other than health. It has been recognized that by concentrating on the provision of basic facilities like safe drinking water and sanitation, it is possible to target two-thirds of the health problems (“PPP only solution to healthcare challenge”, 2014). Inter-sectoral efforts can help to bring about health improvements and also ensure ecologically sustainable development.

The Government of India has framed guidelines for inter- and intra-sectoral coordination. Under the NRHM, the effort towards fostering convergence with other ministries is demonstrated by the fact that the policy making body at the national level, called the Mission Steering Group (MSG), comprises members from various ministries and departments namely, health and family welfare, rural development, Panchayati Raj, women and child development and human resource development. Similarly, its executive wing also includes representatives from these ministries and departments. Also, under the NRHM, there are village health, nutrition and sanitation committees (VHNSCs) at the village level, headed by Sarpanches. In addition to health, these committees are also involved in activities like vector control measures, sanitation, overseeing of the integrated child development (ICDS) centers, etc. The ASHAs employed by the MoHFW are also responsible for counseling and motivating village inhabitants in toilet construction and its usage, although the program 'total sanitation campaign' (TSC) is being implemented not by the MoHFW but by the department of drinking water and sanitation.

Village Health and Nutrition Day is celebrated every month. It provides an institutional platform for convergence between the MoHFW and the Ministry of Women and Child Development (MWCD), and addresses key issues like immunization, ante-natal checkups, nutrition related counseling, monitoring growth of children, etc.

Efforts have been made towards converging of health, nutrition and women empowerment in different states across the country. The substantial overlap in the target group for Anganwadi Worker (AWW), ANM and ASHA makes the case for convergence even stronger. There is evidence to show that the intent has been there but the extent to which it gets converted into action remains to be seen. Some studies (Sundar, Boraiah, Patel, & Khan, 1997) located deficiencies in the functioning of these committees and observed that 'coordination' existed only on paper. VHNSCs lacked adequate awareness or knowledge, and many a time the village heads were unable to prioritize health in their agenda.

Dr. Jagdish Prasad, Director-DGHS, as reported in the Economic Times article "PPP only solution to healthcare challenge in India", dated August 12, 2014, called for integration of the working of five key ministries: rural development, women and child development, water and sanitation, education, and health. He pointed out that all these ministries worked in isolation and did not know what the other ministries were doing. If these five ministries could launch coordinated campaigns and joint schemes, then India

would be far better equipped to provide quality healthcare to every individual in the country.

For effective coordination it is crucial to focus on behavior change, communication, monitoring and information systems, capacity building, and training. The conditions required for effective inter-sectoral action include:

- identifying the need to work together
- creating opportunities
- facilitating ramping up of a relationship
- capacity building, and
- planning, implementation and evaluation of the coordinated action (Inter-sectoral action for health: a cornerstone for health-for-all in the twenty-first century, 1997).

Coordination becomes effectively operational when the inputs and outputs of different teams are inter-related and each member of these teams sincerely performs the tasks assigned to him or expected of him. In this respect, the system that exists today is grossly deficient and therefore, needs to be reformed. As systems and structures are inter-dependent, no change in a system is recommended without a review of the structure. The two alternatives that one may choose from are:

1. Design systems assuming that there is no structure, follow it up with the design of a suitable structure, and finally place people in the newly designed structure where excess/shortage of staff would be adjusted through inter-departmental transfers or fresh recruitments.
2. Design the system with all its input/output parameters but also accept the existing structure as a reality. In such a case, it would help to make adjustments in manpower requirements between the NRHM and the rest of the health services through inter-organizational/departmental transfers or promotions or deploying resources on lien. This alternative is fraught with the danger of a lot of confusion and misunderstandings in the early stages, but if the change is planned well and implemented with care and without prejudice, the intermixing of people from different outfits will help to breed greater mutual trust, respect and support, which can ultimately become the key to successful functioning of the healthcare services.

Table-4.5: Component-wise List of the Most Significant Issues

Q		Significant Issues	F (%)
1.1	***Buildings and Constructed Space (52%)***		
	1	Tertiary care hospitals were overburdened because of non-functional and insufficient primary and secondary care hospitals	13
	2	Most health centers were not fully functional (prescribed IPHS standards were not followed)	13
	3	Healthcare centers were not rationally distributed	13
	4	Poor/lack of facilities in public hospitals de-motivated the doctors and affected their performance	13
1.2	***Equipment and Facilities (55%)***		
	1	Lack of care and maintenance, resulted in an ever increasing lot of discarded hospital equipments/appliances	30
	2	Most health centers were not fully functional (prescribed IPHS standards were not followed)	14
	3	Absence/ inadequate provision of electricity	11
	4	Lack of needed equipments at the healthcare facilities	11
1.3	***Human Resource (54%)***		
	1	Inadequate service delivery staff, more so in rural areas/shortage of adequately trained manpower	20
	2	Lack of meaningful training and development of manpower. Given the questionable quality, the training was largely ineffective. Neither were there any regular in-service training programs nor any refresher courses	10
	3	Vacant posts in rural healthcare settings	6
	4	Lack of motivation, dedication and commitment among health staff	6
	5	Poor quality of healthcare workers	6
	6	Lack of accountability which, in any case, was not very clearly defined	6
1.4	***Drugs, Pharmaceuticals and consumables (53%)***		
	1	Poor logistics relating to distribution, handling and storage of drugs in government healthcare settings	17
	2	Inadequate or weak drug control infrastructure at the State and/or Central levels	13
	3	Infrequent prescription of generic medicines	9
	4	Presence of fake/sub-standard medicines in the market	7
	5	Focus of government on L-1 affect the quality of drug purchase	7
	6	Drugs were not available at affordable prices	7
1.5	***Environment (58%)***		
	1	Inadequate provision of safe drinking water	19
	2	Inadequate toilet facilities in rural areas	15

Table-4.5: Component-wise List of the Most Significant Issues (Contd.)

1.5	***Environment (58%)***		
	3	A lack of community participation	13
	4	In difficult geographic terrains, accessibility of services was an issue	11
1.6	***Finance and Insurance (56%)***		
	1	Low budget allocation to health, including research	34
	2	Utilization certificates not received despite repeated follow up	11
	3	Very low percentage of population who sought health insurance cover	11
1.7	***Education and Research (51%)***		
	1	Inadequate number of teaching staff	27
	2	Rapid mushrooming of private colleges, many of which were of questionable quality	13
	3	College admissions provided a huge scope for corruption	11
2.0	***Administration (53%)***		
	1	Ineffective supervision, monitoring and evaluation has resulted in inefficient use of resources. Consequently there was no fear of being held accountable	10
	2	Corruption was as prevalent in this sector as in any other sector	8
	3	Decentralization of administration had not benefited much (e. g. PRIs, VHSCs)	8
	4	A lack of inter-sectoral co-ordination, non-existent co-ordination between medical education and health departments	6
	5	Health was a state subject: policies were made at the centre while implementation remained a state responsibility. The upshot was a lack of ownership, frequent problems in implementation, and failure in local adaptations of central programs	3
	6	People were not adequately aware of their entitlements in respect of drugs, diagnostics, referral transport and other services, free deliveries at public health facilities, etc.	3
	7	Ineffective regulations	3
	8	Implementation of IEC activities was not effective	2
	9	Ineffective legislations	2
	10	Available manpower was not optimally distributed/used	2
	11	Inequity in the distribution of healthcare services	2
	12	People did not trust the government for quality services; perception of poor quality affected demand	2
	13	Frequent transfers of people at administrative level with the result that the priorities in healthcare kept changing quite frequently, which in turn reduced the impact of NRHM	2

Chapter 5

ANALYSIS OF DEMAND AND ENVIRONMENT

5.1. Demand Analysis

5.1.1. Demand-supply gap: healthcare facilities

5.1.1.1. Requirements and availability of Healthcare Centers

5.1.1.2. Requirements and availability of Beds

5.1.2. Demand-supply gap: qualified manpower (medical staff)

5.1.2.1. Requirements of Doctors, Nurses and Midwives (Demand)

5.1.2.2. Availability of Doctors, Nurses and Midwives (Supply)

5.1.3. Health Expenditure

5.1.4. Conclusions

5.2. Environment Analysis

5.2.1. Component-wise Analysis of SWOT
(Strengths, Weaknesses, Opportunities, Threats)

5.2.1.1. Buildings and Constructed Space & Equipments and Facilities

5.2.1.2. Human Resource

5.2.1.3. Drugs, Pharmaceuticals and Consumables

5.2.1.4. Environment

5.2.1.5. Finance and Insurance

5.2.1.6. Education and Research

5.2.1.7. Administration

5. ANALYSIS OF DEMAND AND ENVIRONMENT

Every organization with its resources, facilities and systems strives to generate outputs for its consumers. Health sector is no different. It is the demand that, to a large extent, determines the nature, range and magnitude of products and services that the sector must produce. The environment in which the sector functions is important from the point of view of what it might or might not be able to achieve in terms of its performance. The nature of demand and environment, both present and projected, are essential inputs to the formulation of the sector's strategy.

5.1. Demand Analysis

Analysis of demand is also crucial to planning. It is a vital input for making decisions in regard to optimal use of its available resources.

The demand for healthcare services in any country is a function of the concern for and the expectations of good health at both national and individual levels. These concerns and expectations are broadly summed up in the norms prescribed by the Indian Public Health Standards (IPHS) for various direct components that together comprise resources for the delivery of healthcare services. The real demand for healthcare services will acquire significance only after the country is able to reach the status expected in accordance with the prescribed norms. To the extent the ground situation reflects a considerable gap compared with what is required, the immediate objective has to be to close this gap as speedily as possible.

The demand for healthcare services depends on the impact of several components which either directly or indirectly affect it. The direct components are the physical facilities required for healthcare, and the availability of qualified manpower such as doctors, nurses, midwives, paramedics, etc., who physically provide these services. Direct components also include a few other resources which are required for prevention and treatment, such as pharmaceuticals, medical devices, appliances and instruments, etc.

The indirect components comprise institutional capacities to provide medical and allied health education, drugs required for manufacture of pharma products, medical equipments, and facilities for medical insurance and financing of medical care.

As far as the drugs are concerned, India is generally self-sufficient in terms of its ability to produce and supply all of those which are commonly needed (SMERA-Industry Report, n. d.). In the case of medical equipments, however, barring the ones at the low-end, the high-end medical equipments and appliances will continue to be imported (Datta, Mukhopadhyay, & Selvaraj, 2013). Similarly, most of the devices and disposables are imported. The argument in favour of imports is that in some cases, the quantities required are not large enough to justify investments, and in others, the needed investments are so large that the country would rather invest its available funds in favour of other preferred trade-offs.

As far as facilities for medical insurance are concerned, at present there are nearly 20 medical insurance companies operating in India. As business opportunities grow, the number and size of health insurance companies, as it often happens in all other cases, will grow commensurately.

Essentially, therefore, the factors to be considered for computing demand-supply gap in healthcare services are just two: required and existing healthcare facilities (healthcare centers and beds) at different levels, and the requirement and availability of qualified manpower (doctors, nurses and midwifes) to provide these services. These are discussed below.

5.1.1. Demand-supply gap: healthcare facilities

5.1.1.1. Requirements and availability of Healthcare Centers (SCs, PHCs, CHCs)

Table-5.1 explains the shortfalls in the number of SCs, PHCs and CHCs. These shortfalls have been determined by computing their requirements based on the IPHS norms, and comparing them with the facilities that exist, as reported by the CBHI (n. d.). The historical figures for population are taken from the World Bank database. The rural population is assumed as 70% of the total population ("About 70 per cent Indians live in rural areas", 2011). The estimate of the number of health centers required is based on the following IPHS norms:

- one SC for a population of 5000 people in the plains
- one SC for a population of 3000 in tribal and hilly areas
- one PHC for every 6 SCs

- one CHC for every 4 PHCs

For the purpose of accounting for tribal population, the number of health centers is multiplied by a factor of 1.04. The details are provided in the Exhibit-Demand, placed at the end of this chapter.

The shortfalls in 2013 were around 17%, 20% and 21% in case of SCs, PHCs and CHCs, respectively. Therefore, the immediate requirement is to first meet these shortfalls.

In-position figures for SCs, PHCs and CHCs, as shown in Table-5.1, indicate that the average annual rate of construction has been approximately 1070 SCs, 340 PHCs and 190 CHCs. Table-5.2 presents the projected shortfalls in the number of SCs, PHCs and CHCs, based on a trend analysis.

Table-5.1: Shortfall in SCs, PHCs and CHCs

	In-position*			**Required**			**Shortfall**		
Year	**SCs**	**PHCs**	**CHCs**	**SCs**	**PHCs**	**CHCs**	**SCs**	**PHCs**	**CHCs**
2008	145272	22370	4045	171480	28580	7145	26208	6210	935
2009	146036	23458	4276	173739	28956	7239	27703	5498	1741
2010	145894	23391	4510	176000	29333	7333	30106	5942	1391
2011	148124	23887	4809	178267	29711	7428	30143	5824	1604
2012	148366	24049	4833	180534	30089	7522	32168	6040	1482
2013	151684	24448	5187	182790	30465	7616	31106	6017	1599

**Compiled from CBHI*

Table-5.2: Projected Shortfalls

Year	**SCs**	**PHCs**	**CHCs**
2016	35,532	6,007	1,892
2021	40,950	6,085	2,286
2026	46,367	6,162	2,680

The current rate of construction is indeed too sluggish to ever be able to take care of the future demands.

5.1.1.2. Requirements and availability of Beds

As discussed in the chapter on 'Review of Literature', India ranked a low 6th among the 8-member group on most parameters within the SAARC (South Asian Association for Regional Cooperation) countries. The only reason for these countries to belong to this group is their geographical proximity. In terms of most other parameters such as the size of population, level of industrial development, costs and standards of living, etc., SAARC is a heterogeneous group and therefore, any intra-group comparison of the constituent countries is not seen as meaningful.

As an emerging economy, however, it is reasonable to compare India's performance vis-à-vis other similar economies such as China, Brazil, etc. The following reasons justify as to why BRICS (Brazil, Russia, India, China and South Africa) countries might offer a better standard for comparison.

a. Any comparison with the average world figures is of little value because of the widely varying conditions in terms of the size of population, status of economy, standard of living, per capita income, etc.
b. Comparing with the developed countries is also not any wiser because India is yet to match the status of these countries.
c. Comparing with other underdeveloped and developing countries may provide some solace but that would be utterly meaningless.

Therefore, it seems prudent to study the performance of India vis-a-vis other countries in BRICS which are spread across the globe in four continents. In terms of the level of development, all these countries belong to a certain band. The only major difference is in terms of the size of their population.

Among BRICS countries, Russia and South Africa could not be included for comparison because the data was not available as required. As the rest of the BRICS countries including India report their actual bed density for the combined public and private sector facilities, the demand estimates here relate not just to public sector but instead to the entire health sector.

Tables 5.3 to 5.5 provide figures for the in-position as well as requirements of beds for India, Brazil and China. The computation of requirements is based on the WHO norm of 3.5 beds per 1000 population. Data relating to population is taken from the World Bank database ("Population –total", n. d.).

Table-5.3: Number of Beds - India

Year	India			
	Population (million)	No. of Beds		
		Required	In position	Shortfall
2005	1,127.1	3,945,002	1,014,429	(2,930,573)
2006	1,143.3	4,001,513	NA	NA
2007	1,159.1	4,056,833	NA	NA
2008	1,174.7	4,111,318	NA	NA
2009	1,190.1	4,165,483	NA	NA
2010	1,205.6	4,219,686	NA	NA
2011	1,221.2	4,274,047	854,809	(3,419,238)
2012	1,236.7	4,328,404	NA	NA
2013	1,252.1	4,382,489	NA	NA

Table-5.4: Number of Beds - Brazil

Year	Brazil			
	Population (million)	No. of Beds		
		Required	In position	Shortfall
2005	186.1	651,498	446,742	(204,757)
2006	188.1	658,470	NA	NA
2007	190.0	664,989	NA	NA
2008	191.8	671,179	NA	NA
2009	193.5	677,218	464,378	(212,840)
2010	195.2	683,236	468,504	(214,731)
2011	196.9	689,273	452,951	(236,322)
2012	198.7	695,296	456,909	(238,387)
2013	200.4	701,267	NA	NA

Table-5.5: Number of Beds - China

Year	China			
	Population (million)	No. of Beds		
		Required	In position	Shortfall
2005	1,303.7	4,563,020	3,194,114	(1,368,906)
2006	1,311.0	4,588,570	2,923,575	(1,664,995)
2007	1,317.9	4,612,598	NA	NA
2008	1,324.7	4,636,293	NA	NA
2009	1,331.3	4,659,410	5,591,292	931,882

2010	1,337.8	4,681,968	4,762,230	80,262
2011	1,344.1	4,704,455	5,107,694	403,239
2012	1,350.7	4,727,433	NA	NA
2013	1,357.4	4,750,830	NA	NA

Historical shortfalls, computed as above, indicate that India is the worst performer among all these BRICS countries.

The rate of growth in the shortfall of beds in India appears to be approximately 80,000 per year. Based on this information, the projected shortfalls for the years 2016, 2021 and 2026 are shown in the Table-5.6

Evidently, India lags far behind the requirements as per the WHO norm. As a result, a good number of patients are either refused admission or they themselves choose not to seek admission to public healthcare centers.

Table-5.6: Projected Shortfall in Number of Beds - India

Year	Population (million)	Projected Shortfall
2016	1,269	3,819,238
2021	1,340	4,219,238
2026	1,400	4,619,238

It is well known that many government hospitals, particularly the larger ones, per force admit more patients than their number of beds justify. It is also known that in many hospitals several beds are marked for allotment of two patients per bed. In some cases a sizeable number of patients are left with no option but to settle down on hospital floors, often even without the comfort of mattresses.

A report by McKinsey and Company (2012) pointed out that in 2002 the bed availability in India was well below the global average of 2.54 per 1000 population. An analysis by Pricewaterhouse Coopers (2013) also highlighted the gap in the bed availability in India and suggested the need to invest in increasing the number of beds in the primary and tertiary care hospitals. A report by CRISIL Research (2012) estimated the need to invest around 7 trillion rupees over the next five years to reach the global median of 24 beds per 10,000 population. Even if the softer goal of only 2 beds per 1000

population is considered**,** as mentioned in the report of Planning Commission (2011a), there will still be a shortfall of about 1.6 million beds.

It is necessary to know as to what prevents entrepreneurs and investors from funding and operating hospitals. Some of the issues that came into play are of course the size of financing and the problems of acquiring land, but the other impediments which are no less discouraging are the requirement of having to comply with a myriad of rules and regulations, red tape, political interference, bureaucratic controls and corruption. These revelations came up again and again in several interviews during the field survey.

5.1.2. Demand-supply gap: qualified manpower (medical staff)

5.1.2.1. Requirements of Doctors, Nurses and Midwives (Demand)

The norm suggested by WHO is a minimum of 2.54 doctors and nurses (including midwifes) per 1000 population. Although, there is no specific standard or norm that prescribes doctor-population ratio, the High Level Expert Group on Universal Health Coverage for India, constituted by the Planning Commission, in its report recommended*, inter alia*, increase in the availability of doctors to 1:1000 population (Ministry of Health and Family Welfare [MoHFW], 2012). The norm as per the Planning Commission is a doctor: nurse (including midwifes) ratio of 1:3. These two norms taken together imply 4 doctors and nurses (including midwifes) per 1000 population. Preferring this norm means also satisfying the WHO norm. Suggesting more nurses per doctor may be the result of either increasing the number of nurses because doctors are not being produced at the required rate or the government intends the nurses to share a good part of the doctors' load at the lower end of their responsibility.

Although allied health professionals should also have been considered as part of the medical staff, these are excluded from this discussion because neither is their categorization explicitly defined nor is adequate data regarding them available.

Tables-5.7 to 5.9 show the availability of medical staff in India, Brazil and China. Clearly, India fared poorest in the group. Brazil and China had more medical staff than required, but in case of India the figures are depressing. The norms used in these tables are one doctor per 1000 population, and a doctor: nurses (including midwifes) ratio of 1:3.

From Table-5.7, it may be noted that the shortfall has been decreasing. There was more than 10% increase in nurses and midwives per year, whereas the number of doctors in fact shrunk in the year 2012. The glaring gap in manpower was highlighted by Klynveld Peat Marwick Goerdeler (KPMG) in its report (2011). It mentioned that during 2000-2009, India had an average of 0.6 doctors per 1000 population against the global average of 1.23.

The shortage of doctors, it seems, is more virtual than real. Much of it appears to have been artificially induced. It is known very well that nurses in India are not allowed to do certain parts of doctors' work, which they are quite capable of doing equally well. If Indian nurses employed in the developed countries are performing several activities which in India are handled by doctors, it appears that the shortage of doctors after all is not as much as is made out to be.

5.1.2.2. Availability of Doctors, Nurses and Midwives (Supply)

On the supply side, the focus is only on the medical colleges and nursing institutes. In the absence of norms for allied health services it is not known if such professionals are available as required.

Medical Colleges

In India, there has always been a considerable shortage in the supply of doctors. Table-5.10 explains the shortfalls over the period 2005-13. Tables-5.10 to 5.13, reflect population data compiled from the Census ("Census: Projected Total Population", 2001).

Table-5.10: Supply of Doctors

(Figures in '000)

Year	Population	Required	Medical colleges *		Shortfall in supply of doctors	% shortfall
		Doctors	No. of Colleges	Admissions		
2005	1,127,144	1,127	242	26,449	(1,100)	(97.6)
2006	1,143,289	1,143	262	28,928	(1,114)	(97.5)
2007	1,159,095	1,159	266	30,290	(1,129)	(97.4)
2008	1,174,662	1,175	289	32,815	(1,142)	(97.2)
2009	1,190,138	1,190	300	34,595	(1,156)	(97.1)
2010	1,205,625	1,206	314	29,263	(1,176)	(97.6)
2011	1,221,156	1,221	356	38,210	(1,183)	(96.9)
2012	1,236,687	1,236	381	43,576	(1,193)	(96.5)
2013	1,252,140	1,252	NA	NA	NA	NA

** Compiled from CBHI; figures in absolute numbers and not '000*

Table-5.7: Shortfalls in Number of Doctors: - India

(Figures in '000)

Year	Population*	Required			In position			Shortfall		
		Physicians	Nurses and midwives	Total	Physicians+	Nurses and midwives+	Total	Physicians	Nurses and midwives	Total
2005	1,127,144	1,127	3,381	4,509	675	1,513	2,188	(452)	(1,869)	(2,321)
2006	1,143,289	1,143	3,430	4,573	696	NA	NA	(447)	NA	NA
2007	1,159,095	1,159	3,477	4,636	722	1,605	2,327	(437)	(1,872)	(2,309)
2008	1,174,662	1,174	3,524	4,698	752	1,686	2,437	(422)	(1,838)	(2,261)
2009	1,190,138	1,190	3,570	4,761	772	1,735	2,508	(418)	(1,835)	(2,253)
2010	1,205,625	1,205	3,617	4,822	832	1,930	2,762	(374)	(1,687)	(2,060)
2011	1,221,156	1,221	3,663	4,884	907	NA	NA	NA	NA	NA
2012	1,236,687	1,236	3,710	4,946	868	NA	NA	(368)	NA	NA
2013	1,252,140	1,252	3,756	5,009	NA	NA	NA	NA	NA	NA

* *Population: Data (in million) from the World-Bank*
+ *Data from the WHO*

Table-5.8: Shortfalls in Number of Doctors - Brazil

(Figures in '000)

Year	Population*	Required			In Position			Excess		
		Physicians	Nurses	Total	Physicians+	Nurses+	Total	Physicians	Nurses	Total
2005	1,86,000	186	558	745	310	929	1,239	124	371	495
2006	1,88,000	188	564	753	319	956	1,275	131	392	523
2007	1,90,000	190	570	760	327	980	1,307	137	410	547
2008	1,92,000	192	575	767	338	1,015	1,353	146	440	586
2009	1,94,000	193	580	774	348	1,043	1,390	155	462	617
2010	1,95,000	195	586	781	NA	NA	NA	NA	NA	NA
2011	1,97,000	197	591	788	366	1,097	1,463	169	506	675
2012	1,99,000	199	596	795	NA	NA	NA	NA	NA	NA
2013	2,00,000	200	601	801	379	1,137	1,516	179	536	715

* *Population: Data (in million) from the World-Bank*
+ *Data from the WHO*

Table-5.9: Shortfalls in Number of Doctors - China

(Figures in '000)

Year	Popln*	Required			In Position			Excess		
		Physicians	Nurses	Total	Physicians+	Nurses+	Total	Physicians	Nurses	Total
2005	1,304	1,304	3,912	5,216	NA	NA	NA	NA	NA	NA
2006	1,311	1,311	3,933	5,244	NA	NA	NA	NA	NA	NA
2007	1,318	1,318	3,954	5,272	NA	NA	NA	NA	NA	NA
2008	1,325	1,325	3,975	5,300	NA	NA	NA	NA	NA	NA
2009	1,331	1,331	3,994	5,325	1,884	5,651	7,535	552	1,657	2,210
2010	1,338	1,338	4,013	5,351	1,948	5,843	7,791	610	1,830	2,440
2011	1,344	1,344	4,032	5,376	NA	NA	NA	NA	NA	NA
2012	1,351	1,351	4,053	5,404	NA	NA	NA	NA	NA	NA
2013	1,357	1,357	4,071	5,428	NA	NA	NA	NA	NA	NA

* *Population: Data (in million) from the World-Bank*
+ *Data from the WHO*

The projected shortfalls in the supply of doctors, estimated on the basis of a regression analysis, are presented in Table-5.11. The analysis is explained in the Exhibit-Demand, which is placed at the end of this chapter.

Table-5.11: Projected Shortfalls in Supply of Doctors

Year	Population (million)	Shortfall ('000)
2016	1,269	1,225
2021	1,340	1,286
2026	1,400	1,338

Nursing Education Institutes

Table-5.12 shows the historical shortfalls in the supply of nurses and midwifes. The requirements of nurses and midwifes are assumed as 3 per 1000. Data for columns IV to VII are compiled from CBHI.

The projected shortfalls, estimated on the basis of a regression analysis, are presented in Table-5.13. This analysis also is explained in the Exhibit-Demand.

Table-5.13: Projected Shortfalls in Supply of Nurses and Midwifes

Year	Population(million)	Shortfall ('000)
2016	1,269	3,649
2021	1,340	3,799
2026	1,400	3,927

From Tables-5.10 to 5.13, it is evident that there is going to be a huge shortfall in the required number of doctors, nurses and midwives vis-à-vis their supply, and the shortfalls will be on the rise. It is important to note that in the absence of required data the effect of attrition could not be factored in. Therefore, the projected shortfall is likely to be even more. Given the number of doctors, nurses and midwives annually supplied by colleges, there is no way it can ever catch up with the demand. The reasons behind this growing gap between the demand and supply of doctors are many.

Table-5.12: Nursing Institutes

Year	Population (million)	General Nurses and Midwifes			Auxiliary Nurse Midwives		Total		Shortfall in supply of nurses and midwives ('000)	Incremental (%) rate of shortfall
		Reqd ('000)	No. of Inst*	Admsn capacity*	No. of Inst*	Admsn capacity*	No. of Inst*	Admsn capacity*		
I	II	III	IV	V	VI	VII	VIII	IX	X	XI
2005	1,127	3,381	635	NA	237	NA	872	NA	NA	NA
2006	1,143	3,430	1,312	50,628	271	6,942	1,583	57,570	(3,372)	(98.3)
2007	1,159	3,477	1,597	59,138	312	7,467	1,909	66,605	(3,411)	(98.1)
2008	1,175	3,524	1,620	62,647	329	6,502	1,949	69,149	(3,455)	(98.0)
2009	1,190	3,570	1,820	65,109	491	10,680	2,311	75,789	(3,495)	(97.9)
2010	1,206	3,617	2,028	80,332	676	15,335	2,704	95,667	(3,521)	(97.4)
2011	1,221	3,663	2,028	80,332	676	15,335	2,704	95,667	(3,568)	(97.4)
2012	1,237	3,710	2,670	109,224	1,642	46,719	4,312	155,943	(3,554)	(95.8)
2013	1,252	3,756	NA	NA	NA	NA	NA	NA	NA	NA

* *Absolute numbers (not in '000)*

Firstly, the number of medical colleges and their approved seats are not enough. It is not unreasonable to conclude that there is a deliberate lack of effort to push up supply. The fallouts of the sustained shortfall include charging of exorbitant fees from patients, involvement of doctors in private practice while remaining employed in government hospitals, and a whole range of rampant corrupt practices such as accepting gifts and commissions from pharmaceutical and diagnostic companies, etc. Also, the MCI is not seen as keen to take any noteworthy steps to boost supply by encouraging growth in the number of medical colleges. Although, there are enough funds available for investing in medical education, especially in the private sector, there appears a total lack of effort towards encouraging or facilitating investments in this field. Given this apathy the government needs to intervene and get the MCI to approve more number of colleges as well as seats/ intake of students in the existing colleges. Another step that may be taken to partially address the problem of shortage of doctors is to raise the present norm of doctor: nurse ratio. The other advantage of such a step is that it would enlarge and enrich the job content of senior nurses, lower the operating costs of establishments, provide patients with option to seek less expensive care and treatment and to an extent contain corrupt practices.

To sum up, it is evident from the discussion so far that there have been substantial shortfalls in the number of healthcare centers and beds as also in the number of different categories of qualified healthcare staff. Any endeavour towards bridging the gaps would require huge investments of funds. It is from this point of view that a discussion on health expenditure assumes significance.

5.1.3. Health Expenditure

Table-5.14 shows the total health expenditure of selected BRICS countries at constant and current prices over the period 2002 to 2012. The data for Table-5.14 is compiled from the WHO database (Global Health Expenditure Database, n. d.). These statistics reflect India's poor performance on the parameter of healthcare expenditure and highlight the fact that it is quite inadequate to meet the needs of its huge population. Several reports, including those published by the government (MoHFW, 2005, Planning Commission, 2011a), confirm that India needs to increase its health expenditure to at least 3% of GDP.

Table-5.15 shows the trend in per capita health expenditure of BRICS countries. The statistics for population is taken from the World Bank database, and the computation of per capita health is based on the values from Table-5.14. The trend shows an increase in the expenditure; the percentage increases between year 2005 and 2011 were approximately 31%, 35% and 98% for Brazil, India and China in that order. While for Russia and South Africa these were 45% and 10% respectively. What might be of interest to note here is that with India's population being nearly six times that of Brazil, and health expenditure being only about half of that of Brazil, India needs to raise its expenditure by about 12 times before it may come at par with Brazil. To put it differently, for a per capita health expenditure of 100 US$ for Brazil, it was 97, 79, 32 and 8 US$ for South Africa, Russia, China and India, respectively.

Table-5.16 presents the per capita health expenditure (public and private) as a percentage of GDP. Statistics from the World Bank database have been used for per capita health expenditure and per capita GDP at current prices. Here again, India with its health expenditure of just 4 % per capita GDP ranked the lowest. These statistics show that India has not been spending enough on the health of its population. A report of McKinsey and Company (2012) highlighted that the percentage of GDP spent on healthcare in the last decade (year 2000 to 2010) had decreased from 4.4 to 4.0.

The figures for the year 2012 in Table-5.17 show that India's per capita GDP (at constant prices) was the lowest among all BRICS countries. The reason for this was not just the large population the country carried; even the country's gross output did not match that of Brazil, Russia or China. The growth in per capita GDP over the 7-year period since 2005 was encouraging @ 10% per year, which happened to be only second to China in the group. India's per capita expenditure on health was the poorest among all countries in the group.

Whichever way the expenditure on healthcare is viewed from, India's performance has been very poor. At a time when the government is committed to launch Universal Healthcare Coverage, the above statistics make it obvious that the country needs to invest far too much more than what has generally been done so far.

(Definitions, summary of norms and regression equations are presented in the Exhibit-Demand at the end of the chapter.)

Table-5.14: Total Health Expenditure (THE) at Constant and Current Prices

(Million US$)

Year	Brazil		Russia		India		China		South Africa	
	Constant prices (2005)	Current prices	Constant prices (2005)	Current prices	Constant prices (2005)	Current prices	Constant prices (2005)	Current prices	Constant (prices 2005)	Current prices
2002	57,532	36,407	37,407	20,655	28,988	22,925	80,563	68,757	18,536	9,491
2003	56,822	38,806	37,585	24,101	30,514	26,161	89,280	78,225	19,371	14,565
2004	60,970	47,328	37,258	30,547	34,524	32,231	96,269	90,196	20,900	19,549
2005	72,060	72,060	39,821	39,594	35,589	35,589	105,682	103,942	21,729	21,744
2006	77,779	92,396	43,834	52,065	36,847	38,168	115,742	121,367	22,262	22,267
2007	82,400	115,775	48,249	69,175	39,009	46,826	126,477	149,430	21,453	22,276
2008	84,748	136,969	48,532	84,371	41,018	50,851	147,354	205,231	22,940	21,939
2009	89,266	141,824	53,678	74,494	44,548	52,647	178,888	251,583	24,382	24,645
2010	98,782	193,049	57,281	95,241	46,194	62,909	190,371	288,709	25,223	31,708
2011	100,235	220,363	57,479	114,725	52,220	75,444	216,092	368,037	25,940	34,999
2012	105,790	209,875	61,362	126,975	55,606	75,882	241,008	445,461	27,003	33,769

Table-5.15: Per Capita Health Expenditure at Constant Prices (2005)

Year	Brazil		Russia		India		China		South Africa	
	Population*	Expenditure+	Population	Expenditure	Population	Expenditure	Population	Expenditure	Population	Expenditure
2003	182	313	145	260	1,094	28	1,288	69	47	412
2004	184	331	144	260	1,111	31	1,296	74	48	439
2005	186	387	143	278	1,127	32	1,304	81	48	450
2006	188	413	143	308	1,143	32	1,311	88	49	455
2007	190	434	142	340	1,159	34	1,318	96	50	433
2008	192	442	142	342	1,175	35	1,325	111	50	457
2009	194	461	142	378	1,190	37	1,331	134	51	479
2010	195	506	142	402	1,206	38	1,338	142	52	489
2011	197	509	143	402	1,221	43	1,344	161	52	496
2012	199	533	143	429	1,237	45	1,351	178	52	517

*Population in million

+Expenditure in million US$

Table-5.16: Per Capita Health Expenditure as % of GDP

Year	Brazil			Russia			India			China			South Africa		
	Health Exp per capita (cur US$)	GDP per capita (cur US$)	Health Exp as % of GDP per capita	Health Exp per capita (cur US$)	GDP per capita (cur US$)	Health Exp as % of GDP per capita	Health Exp per capita (cur US$)	GDP per capita (cur US$)	Health Exp as % of GDP per capita	Health Exp per capita (cur US$)	GDP per capita (cur US$)	Health Exp as % of GDP per capita	Health Exp per capita (cur US$)	GDP per capita (cur US$)	Health Exp as % of GDP per capita
2002	202.95	2,811	7.22	142.05	2,373	5.98	21.29	487	4.38	53.70	1,135	4.73	204.51	2,425	8.43
2003	213.51	3,040	7.02	166.60	2,975	5.60	23.92	565	4.23	60.71	1,2737	4.77	309.77	3,625	8.55
2004	257.20	3,607	7.13	212.40	4,109	5.17	29.02	650	4.47	69.59	1,490	4.67	410.35	4,660	8.81
2005	387.12	4,739	8.17	276.66	5,338	5.18	31.57	740	4.27	79.73	1,731	4.61	450.48	5,186	8.69
2006	491.12	5,788	8.49	365.40	6,948	5.26	33.38	830	4.02	92.57	2,069	4.47	455.26	5,407	8.42
2007	609.35	7,194	8.47	486.76	9,145	5.32	40.40	1,069	3.78	113.39	2,651	4.28	449.47	5,851	7.68
2008	714.25	8,623	8.28	594.35	11,700	5.08	43.29	1,042	4.15	154.93	3,414	4.54	436.84	5,511	7.93
2009	732.97	8,373	8.75	524.94	8,616	6.09	44.24	1,147	3.86	188.98	3,749	5.04	484.23	5,658	8.56
2010	988.93	10,978	9.01	668.89	10,710	6.25	52.18	1,417	3.68	215.82	4,433	4.87	614.75	7,176	8.57
2011	1,118.96	12,576	8.90	802.51	13,324	6.02	61.78	1,540	4.01	273.81	5,447	5.03	669.52	7,831	8.55
2012	1,056.47	11,320	9.33	886.88	14,091	6.29	61.36	1,503	4.08	321.69	6,093	5.28	644.62	7,314	8.81

Table-5.17: Growth in Per Capita Health Expenditure

	Brazil		Russia		India		China		South Africa	
	2005	**2012**	**2005**	**2012**	**2005**	**2012**	**2005**	**2012**	**2005**	**2012**
Population (million)	186	199	143	143	1127	1237	1304	1351	48	52
GDP (billion US$)	882	2249	764	2017	834	1859	2257	8230	258	382
GDP (billion constant US$)	**882**	**1138**	**764**	**981**	**834**	**1394**	**2257**	**4517**	**258**	**317**
GDP per capita (current US$)	4739	11319	5338	14091	740	1503	1731	6093	5444	7314
GDP per capita (constant US$)	**4739**	**5730**	**5338**	**6849**	**740**	**1127**	**1731**	**3345**	**5444**	**6051**
Health Expenditure (billion current US$, approx)	72	210	40	127	36	76	106	445	22	34
Health Expenditure (billion constant US$, approx)	**72**	**106**	**40**	**61**	**36**	**56**	**106**	**241**	**22**	**27**
Health Expenditure per capita (current US$)	387	1056	277	887	32	61	80	322	450	645
Health Expenditure per capita (constant US$)	**387**	**533**	**277**	**143**	**32**	**45**	**80**	**178**	**450**	**517**

Population (million)	http://data.worldbank.org/indicator/SP.POP.TOTL/countries?display=default
GDP (billion current US$)	http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries?display=default
Constant prices	Base = 2005
GDP (billion constant US$)	**http://data.worldbank.org/indicator/NY.GDP.MKTP.KD**
GDP per capita (current US$)	http://data.worldbank.org/indicator/NY.GDP.PCAP.CD/countries?display=default
GDP per capita (constant US$)	**http://data.worldbank.org/indicator/NY.GDP.PCAP.KD**
Health Expenditure (billion current US$)	http://apps.who.int/nha/database/ViewData/Indicators/en
Health Expenditure (billion constant US$)	**Table-5.14**
Health Expenditure per capita (current US$)	http://data.worldbank.org/indicator/SH.XPD.PCAP/countries?display=default
Health Expenditure per capita (constant US$)	**Table-5.15**

5.1.4. Conclusions

Demand for healthcare services is a function of the country's population and the established norms of medical staff to population ratios. The supplies are largely a function of the number of hospital beds and their distribution, availability of medicines and medical equipments and appliances, the number of seats in medical colleges and other health-related institutions.

The demand-supply gap between the requirement and availability of healthcare services present immense opportunities for the development and growth of physical facilities, drugs and pharmaceuticals and medical equipments, and supply of qualified manpower. The major constraint however is the huge requirement of funds, which comes in the way of availing of the opportunities. The constraints other than finance include the vision/outlook of the government, perceptions of people, particularly the patients, attitude of MCI, etc. If the present situation and the trends are allowed to continue, the demand supply gap will only widen, the quality of services will further deteriorate and people will get more restive and disenchanted. Any strategy to bridge the gap ought to focus on:

a. loosening the MCI's stranglehold on the creation of facilities for medical education
b. encouraging investments in hospitals and medical colleges
c. proactive government intervention by way of official directives to appropriately slot in AYUSH doctors in the scheme of preventive and curative medical attention, and
d. lowering the general demand for doctors by insisting on the existing ones to delegate or offload a part of their duties and responsibilities in favour of the next levels of employees

Even under the most optimistic estimates it would take no less than a few decades before the supply situation may reach anywhere near demand.

As mentioned in the beginning of this chapter, other than demand the environment in which the public health system functions also needs to be analyzed. The environment consists of two parts: internal and external. Whereas, in the present case, the internal environment is concerned with the strengths and weaknesses of the public health system, the external environment relates to the opportunities offered and threats posed by entities

that are external to the public health system. Commonly referred to as a SWOT analysis, it is an important tool for planning strategies.

5.2. Environment Analysis

SWOT is extensively used by practitioners as a popular tool for business and marketing strategy formulation. As cited in Helms & Nixon (2010), Glaister and Falshaw heralded SWOT analysis as one of the highest ranked analytical sets of tools and techniques used in strategic planning in companies in the UK. Citing the same document Panagiotou contended that SWOT analysis was used more than any other strategic planning tool. It was also being increasingly used to reform, strategically analyze or design solutions for the health system (Atun et al., 2005; Pedersen, Bech, & Vrangbaek, 2011; South Devon Healthcare, 2006).

SWOT analysis helps to identify the favorable and unfavorable areas among the internal and external factors of an organization or system. It provides a basis for focusing on the areas that should either be leveraged upon or factored in when developing strategies. The four categories under which the analysis is carried out are:

Strengths: internal characteristics that offer an advantage to the organization/system over others

Weaknesses: internal characteristics that act as a disadvantage/handicap to the organization/ system

Opportunities: external factors which can be used to the organization's advantage to improve its performance

Threats: external factors that could potentially act as impediments to the organization's performance

In formulating a strategy to improve the performance of an organization/system, it is necessary to identify its internal strengths and weaknesses, and also to ascertain if it has the capacity to capitalize on the opportunities and the capability to confront and withstand the external challenges. SWOT analysis systematically evaluates a firm's resources in order to formulate various strategies that best fit its internal and external environments (Chou, 2006).

The analysis carried out in the present context, as discussed below, covers all eight components of the health system. The first two components viz. buildings and

constructed space, and equipments and facilities, are discussed together because neither is complete without the other. The observations are based on the information obtained from both primary and secondary surveys. However, only the secondary sources are referred here because no new factor of SWOT emerged in the primary survey.

5.2.1. Component-wise SWOT Analysis

5.2.1.1. Buildings and Constructed Space, and Equipments and Facilities

The government showed its commitment to improve and strengthen the primary healthcare system in the country by launching the NRHM. Although there already exist a large number of healthcare centers at various levels and, in good part, these are geographically well dispersed, yet there is a substantial deficit vis-à-vis the required numbers of SCs, PHCs and CHCs (Gudwani, Mitra, Puri, & Viadya, 2012; Rural Health Statistics [RHS], 2014c). The rural-urban distribution and disparities in the availability of healthcare centers are mentioned in several literature (Dhar, 2013; Gangolli, Duggal, & Shukla, 2005; IMS, 2013; MoHFW, 2005). There are other documents that have recorded the poor maintenance of buildings and equipments (Josephine, 2008; Mavalankar, Ramani, Patel, & Sankar, 2005; Raghavan, 2013; Sarulatha & Perumal, 2013), or commented on the failure of the facilities to meet the operational requirements in accordance with the IPHS norms (Bhandari & Dutta, 2007; Kumar et al., 2011; Sharma & Narang, 2011).

Although medical devices and equipments are being increasingly used in diagnostics and treatment, yet neither enough empirical data is available in this regard nor is there a policy to guide the use of these devices and equipments (Chakravarthi, 2013a; "Ministries squabble", 2009). As mentioned in the Mashelkar Committee Report (MoHFW, 2003), there is no organization specifically responsible for certification/approval or monitoring of medical devices. The industry estimates show that about 90 percent of the devices and disposables are being imported at international prices (Chakravarthi, 2013b; Confederation of Indian Industry and Deloitte, 2010). Also, the domestic market has to contend with the complicated procedures in seeking of licenses, with the result that less than 2 percent out of the 700 units got registered in the last 20 years (Sharma, 2009). The medical device industry has a huge potential for growth. The

market was estimated to be worth $2.17 billion with an annual growth rate of 15 percent (Sharma, 2009). While this presented a huge opportunity to develop the domestic market, the historical lack of faith in the domestically manufactured equipments does act as a damper (Federation of Indian Chambers of Commerce and Industry [FICCI], 2011; Kamat, n. d.).

The other opportunities that exist include an untapped potential of the rural market for establishing laboratories and diagnostics and educational institutions (Bhandari & Dutta, 2007; PricewaterhouseCoopers, 2010).

Strength

- Elaborate network of healthcare facilities
- Locational advantage of all healthcare buildings in the government sector

Weaknesses

- Despite existence of a large number of buildings as SCs, PHCs and CHCs, these are neither adequate nor do they function effectively
- Problems of availability and accessibility of healthcare services because of a skewed distribution of healthcare infrastructure
- Inadequate mechanism of regulating the market of medical devices and equipments
- Equipments at healthcare centers do not match requirements as per the IPHS norms; also, their distribution is irrational
- A lack of interest in maintaining equipments, often results in an ever increasing lot of discards
- Poor maintenance over the years threaten the balance life of many an old building, which now require large investments towards repairs and refurbishments
- A lack of faith in some of the locally manufactured equipments

Opportunities

- Commitment of the government to improve the present situation
- Increasing domestic market for production of devices and equipments, most of which are now met through imports
- Untapped clusters of rural markets for setting up of laboratories and diagnostics, facilities for medical education, etc.

Threat

- The government has not been able to maintain its buildings. Generally, it lacked funds to do so. In course of time, because of political interests and pressures, it may end up having to hand over many such well located facilities to the private sector.

5.2.1.2. Human Resource

The advantage in India is its large and ever growing population. This translates into increasing demand for healthcare services and, at the same time, it also offers a huge working-age population. The country therefore has an opportunity to reap the benefits of its demographic dividend (Bhattacharya, & Pande, 2011; CRISIL Research, 2010).

The health system has a huge network of healthcare facilities. It is backed by several different systems of medicine, all co-existing together. The system also enjoys the support of a large number of community frontline workers (e.g. ASHAs) (MoHFW, 2013d). While there are many long standing issues with regard to the human resource in the public health sector, the foremost problem is the acute shortage of medical and paramedical staff. The absence of a human resource (HR) policy, uneven distribution of manpower and not having a reliable real time database of people engaged in the system, presents some serious constraints (Planning Commission, 2011a; Planning Commission, 2011b; Rao, Bhatnagar, & Berman, 2009b; Rao et al., 2011). In general it is noted that the southern states have a higher workforce density as compared to the north-central states (Rao et al., 2011) and their concentration is more in the urban than rural areas.

Studies have noted that jobs in the private sector enjoy preference over those in the public sector because of better salaries, perquisites, work and life environment, etc. (Ramani, Rao, Ryan, Vujicic, & Berman, 2013). The government needs to worry about this evidence since at all times it is required to cope with the issues like shortage of manpower and their long term retention (Gill, 2009; Rao et al., 2011; Richman, Udayakumar, Mitchell, & Schulman, 2008).

Nonetheless, the differential costs of labor in favor of India gives it an advantage in terms of its ability to offer health services comparable to that of the developed nations at competitive prices (Govindarajan & Ramamurti, 2013; Richman et al., 2008).

Strength

- Very large workforce of volunteers (ASHAs)

Weaknesses

- Acute shortage of manpower at most of the levels in healthcare delivery
- Skewed distribution of manpower
- Absence of a uniform and effective HR Policy
- Inadequate HR database
- Long-term retention of qualified healthcare staff in rural areas

Opportunities

- Large population engenders massive domestic demand for healthcare services
- Large employable population
- Elaborate network of healthcare centers in rural areas
- Coexistence of different systems of medicine, provides varied options of employability and equally varied options of treatment to patients
- Low cost qualified manpower potentially makes it possible to provide treatment to overseas patients at very competitive prices
- Low cost labor is attractive for the local and foreign manufacturers of drugs, medical equipment, appliances, etc.

Threat

- Private sector, lucrative in terms of salary and work environment, is very inviting for the medical and allied health workers to shift out of government healthcare set-ups

5.2.1.3. Drugs, Pharmaceuticals and Consumables

According to the World Health Organization (WHO), 50 to 65 percent of Indians do not even have regular access to essential medicines ("Implement the Promised free medicines scheme", n. d.). The government had recently rolled out a programme to provide essential medicines free of cost to all who use government facilities (MoHFW, 2013e; K. Sharma, 2014).

The demand for generics can be huge because even with equivalent efficacy these cost much less (KPMG, 2006). By introducing Jan Aushadhi Stores, the government has demonstrated its commitment to provide generics at affordable costs ("Introduction to Jan

Aushadhi", n. d.). However, there also are instances where the generics supplied by the government were found to be inferior ("Doctors slam", 2013; "Free medicines", 2012).

It is repeatedly noted that people stay away from utilizing public facilities because the required drugs are often not available at these places (World Bank, 2005). Frequent cancelling of licenses of different drugs by the United States Food and Drug Regulatory Authority (USFDA) presents a persistent threat. There are instances where some manufacturing plants of Indian companies were found to be not adhering to good manufacturing practices (GMP); Ranbaxy recently lost its approval of two drugs in the US ("IPCA Labs plunges", 2015; "Ranbaxy loses" 2015; "US FDA bans", 2014).

Strengths

- Production of generics at low cost; strong manufacturing sector with domestic players having prominent international presence
- Domestic capability to manufacture most medicines
- A good number of FDA approved manufacturers (only second to USA)

Weaknesses

- Difficult to co-ordinate and regulate the pharmaceutical sector, since it is controlled by multiple government departments
- Not all production of generics are of acceptable quality
- Poor supply chain management in the public sector
- Doctors are in the habit of favoring certain brands owing to collusion, inducements, or networking

Opportunities

- Increasing domestic focus on generics
- Adequate availability of professionally qualified manpower
- Population-group transition has led to high demand for drugs, both for the communicable and non-communicable diseases; massive growth of domestic as well as international markets
- Commitment of the government to provide access to essential medicines to all at no cost
- Under-used potential of IT applications
- A favorite country for clinical trials because of established advantages
- Huge demand for low cost, high quality generics in other countries

- Rising purchasing power of the domestic consumers
- Untapped potential of the rural markets
- Rising importance of health insurance
- Increasing consumer awareness and demand for better health services

Threats

- Increasing uncontrolled high out-of-pocket expenditure, most of which is on account of purchase of drugs
- Frequent cancellation of approvals of selected Indian drugs by the U.S. authorities

5.2.1.4. Environment

The environment of a country needs to be supportive of and conducive to the growth and development of its businesses and people. It comprises several factors such as social, political, legal, etc. As far as the range and number of rules, regulations and legislations are concerned, India does have a robust system. The challenging issues regarding the environment, however, are ineffective implementation of laws, low levels of literacy, poverty, poor sanitation, rising burden of communicable and non-communicable diseases, changing demographics, etc. (Bakshi, 2014; Jain et al., 2014; Ministry of Home Affairs, 2011; Ministry of Statistics and Programme Implementation, 2011; Nundy, 2014; Solberg, 2009; United Nations Educational, Scientific and Cultural Organization [UNESCO], 2013-14; WHO, 2011). Added to this unsupportive work environment is the rampant corruption, particularly in the public sector, which is one of the causes of inefficient planning and delivery of healthcare services (Madhiwalla & Roy, 2006).

Strength

- Near adequate number of existing laws

Weaknesses

- Poor enforcement of laws
- Inadequate provision of safe drinking water and sanitation
- Ineffective/lack of inter-sectoral coordination and convergence
- Rapid urbanization of population and changing demographics has resulted in a mismatch between the requirements and distribution of infrastructure
- Unsupportive work environment

Opportunities

- Slew of existing development programmes
- Rapid economic growth

Threats

- Unbridled corruption
- Dual burden of disease
- Absence of national pride
- Low levels of literacy
- Unmitigated poverty which affects affordability

5.2.1.5. Finance and Insurance

High out of pocket expenditures resulting from chronic underfunding in the health sector is an issue which has been highlighted in numerous studies (Balarajan et al., 2011; Baru et al., 2010; Duggal, 2009; Kumar et al., 2011; Planning Commission, 2011a). Curiously, the unspent budget and poor absorptive capacity of the states (Gill, 2009; Planning Commission, 2011b) and inadequate financial protection against medical expenditures, are the other known weaknesses of the health system in the public sector (MoHFW, 2005). Studies also point to the misappropriation of NRHM funds and ineffective auditing systems ("CBI files 23 more", 2013; Shukla, 2012; Solberg, 2008), and issues relating to the centrally sponsored schemes (CSS) (MoHFW, 2011c) such as its failure to integrate with the regular health programs, difficulties in monitoring the utilization of funds, inadvertent weakening of the states' health system, etc., (Gupta & Rani, 2004), as the other reasons that affect the performance of the health system.

Strength

- Presence of a large network of all kinds of banks, financial institutions, life and general (including medical) insurance companies

Weaknesses

- Low budget allocation/inadequate public spending on health
- Failure of states to utilize funds allocated under the NRHM
- Problem of fungibility with the states
- Low insurance coverage
- Funding is based on bed strength, etc., and not on the case load handled

- Problems of tracking in centrally sponsored schemes (funds are tracked only up to their release and not their actual utilization) /dysfunctional financial control system
- Ineffective auditing framework

Opportunity

- Availability of funds in the NRHM; opportunity for states to spend and reduce the unspent budget

Threat

- Growing corruption and its expanding domain in handling of finances

5.2.1.6. Education and Research

India has seen an extraordinary growth in the last decade in the number of colleges that offered education in medical, nursing and other related fields ("A Short Shrift", 2011; Yathish & Manjula, 2009). Most of this increase (about 70 percent) has been in the private sector, which itself is a matter of concern (Ananthakrishnan, 2010). Corruption is pervasive in the system right from the establishing of new colleges and getting formal recognition, to faculty recruitments, student admissions, etc. ("A Short Shrift", 2011; "Need for Stronger", 2010; Yathish & Manjula, 2009). Some of the other observations affecting the quality of education and research in the country are: substandard infrastructure, concentration of majority of the colleges in one region e.g. the southern states (Ananthakrishnan, 2010), huge shortage of faculty, ("A Short Shrift", 2011; Ananthakrishnan, 2007; Yathish & Manjula, 2009) especially in the non-clinical subjects; and emigration of competent doctors and allied health professionals to other countries for a better future (Duttagupta, 2012; Kaushik, Jaiswal, Shah, & Mahal, 2008; Rao et al., 2011).

The situation in regard to the vacant posts in the case of allied health education is no different. Many posts of principals and senior nursing tutors are lying vacant (Raha, Berman, & Bhatnagar, 2009).

The Inter Country Consultation on Allied Health (Paramedical) Services and Education, held in Bangkok for Southeast Asia Region in the year 2000 (WHO, 2000), highlighted the fact that the education of the non-physicians, non-nursing cadre was a neglected area despite the importance of the services rendered by them.

The medical curriculum has not been revised since its inception (including the limited clinical exposure during the graduate course), and therefore it is not responsive to the contemporary needs (Ananthakrishnan, 2010; Sood & Adkoli, 2000; The Medical Council of India, 1992). Also, the manner of teaching is limited to a hospital setting, as a result of which it tends to remain dependent upon sophisticated diagnostic aids. The present system of education provides little knowledge about the rural set-ups (Sood & Adkoli, 2000). The training of a future doctor has to be focused on scientific knowledge together with a strong social foundation (Jayakrishnan, Honhar, Jolly, & Abraham, 2012; Sridhar, 2013). The commitment to provide reservations to social classes has further lowered the educational standards and institutional quality (Kochar, 2009; Rao, 2006).

Research activities in medical colleges are limited to thesis/project work that doctor students have to do to obtain a post-graduate degree. The impetus for a research degree is genuine only in case of doctors recruited into the system for non-clinical subjects (Aggarwal, 2010; Ananthakrishnan, 2010; Deo, 2009). Any research in medical colleges, which is unrelated to the country's health priorities, has little practical implications (Gupta, 2001).

Though the overall usage of IT in the public health sector has been low (Federation of Indian Chambers of Commerce and Industry [FICCI], 2010), its adoption has been much rapid in the private health sector. The use of electronic health records, telemedicine, etc., is predicted to increase manifold in the coming years. The healthcare information technology industry is expected to grow from about US$ 380 million in 2012 to over US$ one billion by 2018 (Dwivedi, 2014). Sadly, the public health sector has lagged behind in using information technology to its advantage (Kalpa, 2012; Planning Commission, 2012; Planning Commission, 2013a). In recent times though, there have been some initiatives by the government towards an enhanced usage of IT in this sector (FICCI, 2010).

With the renewed focus of the government on the strengthening of the primary healthcare in the country, and given the low doctor-patient ratio, considerable opportunities exist for employment in the healthcare setups (Madhok, 2012; Malpani, 2015; Rajadhyaksha, 2012). To reap long term benefits, the persistent weaknesses of the system need to be addressed soonest.

Strength

- Numerous medical colleges provide huge potential for pursuing research

Weaknesses

- Regional imbalances in distribution of colleges
- Questionable quality of several medical colleges; rapid mushrooming, inadequate infrastructure
- Outmoded syllabi fails to address the current needs; many contemporary topics of immense value are not included
- Lack of research culture in medical colleges
- Poor coordination between medical education and government health departments
- Paramedical education is not accorded due importance and respect
- Reservations in admissions, like for ST/SCs, etc., affect the quality of output from the colleges
- Weak infrastructure in colleges and research institutes
- Wide-spread corruption
- Weak research and application link between the industry and the academia
- Falling standards in medical education
- The technological approach overpowers the humanistic approach to medical education
- Research does not get the due importance or encouragement

Opportunities

- Medical profession being viewed as valuable, people show preference to engaging in it
- Despite existence of many colleges, low doctor to patient ratio presents considerable scope for employment
- Untapped potential of IT in this sector
- Existence of an organized three tier infrastructure (PHC, CHC, DH)
- Considerable interest of private players

Threats

- Brain drain; qualified people are moving out to other countries for greener pastures
- Growing mistrust of people in the medical fraternity
- Most private sector players are focused only on their profits, which results in large scale commercialization

5.2.1.7. Administration

After the introduction of the NRHM in the year 2005, there has been progressive improvement in the infrastructure, particularly with respect to primary healthcare. The administration of the existing setup is quite elaborate as it comprises various committees/bodies for its management.

The review of the eleventh Five Year Plan specifically mentioned the lack of an end-line data about the indicators in the health sector (Planning Commission, 2011a).

Apart from the limited use of IT, other weaknesses like, corruption, political interference, etc., are well documented (Hammer et al., 2007; Jain et al., 2014; MoHFW, 2005). The red tape and excessive bureaucracy act as constraints in the smooth and efficient functioning of the entire system (Nundy, 2014). Despite all the gloominess the government's commitment to introducing new policies, including those related to decentralization, presented some hope for the health system to improve (Kaur, Prinja, Singh, & Kumar, 2012; Planning Commission, 2001; Visaria & Bhat, 2011).

Strength

- Elaborate and functional structure and system at all levels for the administration of healthcare services

Weaknesses

- Inequity in the distribution of healthcare services are to an extent the result of personal preferences and political influences
- A lack of synergy between different departments directly/indirectly affects performance of public health
- Inadequate use of IT
- Corruption
- Poor attitude of people employed in government sector
- Quality standards are not clearly prescribed, communicated or monitored
- Non-functional framework for accountability
- Unreliable, biased, or perfunctory appraisal of employee performance
- Excessive bureaucracy presents an insurmountable obstacle to the effective delivery of public health services

Opportunities

- Many involved departments, if coordinated well, can help to speedily achieve better health for the masses
- Policy of the government towards decentralization presents the potential for bringing about the desired changes

Threat

- Political interference

To sum up, the demand for healthcare services (in terms of medical staff such as doctors, nurses and midwifes, drugs and pharmaceuticals, medical equipment and appliances, buildings and constructed space, etc.) is found to be so large as compared to the supplies (in terms of physical facilities, the number of medical colleges and seats for student admission, investments, etc.) that even with the most ambitious strategic initiatives it would take several decades for supplies to match demands. This implies that the demand for healthcare services will in no way have a restrictive impact on the formulation of strategy or limit its choice. From the point of view of environment, the final strategy, as far as possible, should be able to leverage on all the strengths and opportunities in the environment and provide protection against its weaknesses and threats. Strategic initiatives, which are derived from the strategy, will need to confirm that the items of SWOT have been favourably addressed.

Exhibit – Demand

Definitions (as they appear in the sources)

Hospital beds (1 per 1,000 people)
Hospital beds include inpatient beds available in public, private, general, and specialized hospitals and rehabilitation centers. In most cases beds for both acute and chronic care are included.

Population (Total)
Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship -- except for refugees, who are not permanently settled in the country of asylum and are generally considered part of the population of their country of origin. The values shown are mid-year estimates.

GDP (current US$)
GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy, plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data is in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

GDP per capita
GDP per capita is gross domestic product divided by mid-year population. Data is in current U.S. dollars.

Total health expenditure
Total health expenditure is the sum of public and private health expenditures of total population. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation. Data is in current U.S. dollars.

Health expenditure per capita (current US$)
Total health expenditure per capita is the sum of public and private health expenditures as a ratio of total population. Data is in current U.S. dollars.

Summary of Norms

IPHS Norms

For Sub-centers
One Sub-centre for a population of 5000 people in the plains or for 3000 in tribal and hilly areas

For Primary Health Centres
One Primary Health Centre (PHC) for 30,000 people in plains or 20,000 people in tribal and hilly area, or one PHC for every 6 SCs

For Community Health Centers

One Community Health Centre (CHC/Rural Hospital) for a population of 120,000 or 80,000 in hilly or tribal areas, or one CHC for every 4 PHCs

For Beds
WHO Norm: 3.5 beds per 1000 population

For health personnel
Norm for Doctors, nurses and midwives per 1000 population: WHO = 2.54; India = 4.0

Regression equations and coefficients of correlation

Supply (availability) of Doctors

y=a + b*x where, y = shortfall (‘000); x = population (million)

Year	x	y	x*y	x^2	y^2
2005	1,127	1,101	1,240,827	1,270,129	1,212,201
2006	1,143	1,114	1,273,302	1,306,449	1,240,996
2007	1,159	1,129	1,308,511	1,343,281	1,274,641
2008	1,175	1,142	1,341,850	1,380,625	1,304,164
2009	1,190	1,156	1,375,640	1,416,100	1,336,336
2010	1,206	1,176	1,418,256	1,454,436	1,382,976
2011	1,221	1,183	1,444,443	1,490,841	1,399,489
2012	1,237	1,193	1,475,741	1,530,169	1,423,249
Total	**9,458**	**9,194**	**10,878,570**	**11,192,030**	**10,574,052**

$b = (n\sum xy-(\sum x)(\sum y))/(n\sum x^2-(\sum x)^2) = 0.869440807$; $a = (\sum y-b(\sum x))/n = 121.3536059$

Regression equation for shortfall in doctors is: y= 121.3536059 + 0.869440807*x

Coefficient of correlation r = $n\sum xy-(\sum x)(\sum y)/\sqrt{(n(\sum x^2)-(\sum x)^2)}\sqrt{(n(\sum y^2)-(\sum y)^2)}$ **= 0.9965**

Supply (availability) of Nurses and Midwifes
y=a + b*x where, y = shortfall (‘000); x = population (million)

Year	x	y	x*y	x^2	y^2
2006	1,143	3,372	3,854,196	1,306,449	11,370,384
2007	1,159	3,411	3,953,349	1,343,281	11,634,921
2008	1,175	3,455	4,059,625	1,380,625	11,937,025
2009	1,190	3,495	4,159,050	1,416,100	12,215,025
2010	1,206	3,521	4,246,326	1,454,436	12,397,441
2011	1,221	3,568	4,356,528	1,490,841	12,730,624
2012	1,237	3,554	4,396,298	1,530,169	12,630,916
Total	**8,331**	**24,376**	**29,025,372**	**9,921,901**	**84,916,336**

$b = (n\sum xy-(\sum x)(\sum y))/(n\sum x^2-(\sum x)^2) = 2.118460185$; $a = (\sum y-b(\sum x))/n = 961.0154568$

Regression equation for shortfall in nurses and midwifes: y= 961.0154568 + 2.118460185*x

Coefficient of correlation r = $n\sum xy-(\sum x)(\sum y)/\sqrt{(n(\sum x^2)-(\sum x)^2)}\sqrt{(n(\sum y^2)-(\sum y)^2)}$ = **0.975934582**

Computation: Accounting for tribal population (Ref Table-8.1)

Year	Population	Rural Pop	Required SCs	Required		
				SCs**	PHCs***	CHCs***
1	**2**	**3**	**4**	**5**	**6**	**7**
2008	1174662334	822263633.8	164453	171480	28580	7145
2009	1190138069	833096648.3	166619	173739	28956	7239
2010	1205624648	843937253.6	168787	176000	29333	7333
2011	1221156319	854809423.3	**170962**	**178267**	29711	7428
2012	1236686732	865680712.4	173136	180534	30089	7522
2013	1252139596	876497717.2	175300	182790	30465	7616

*The required number of SCs is known only for the year 2011 (source: data.gov.in).

Column-2	Source: World Bank
Column-3	Calculated at 70% of the values in Column-2
Column-4	Calculated by dividing values in Column-3 by 5000; using the IPHS norm of 1 Sub Center for every 5000 rural population
Column-5	Adjusting for hilly/tribal region, calculated by multiplying the values in Column-4 by a factor 1.042729 (**178267/170962**)*
Column-6	Using the IPHS norm of 1 PHC for every 6 SCs
Column-7	Using the IPHS norm of 1 CHC for every 4 PHCs
**	Corrected to provide for hilly/tribal areas
***	After adjustment for hilly/tribal areas

Chapter 6

STRATEGY FORMULATION AND EVALUATION

6. STRATEGY FORMULATION AND EVALUATION

6.1. Distinguishing Strategy and Policy

The objective of the present research was to study the public healthcare system in the light of infrastructure and administration with a view to identify the problems in the system, their causes and possible solutions, and suggest suitable policies and strategies to remedy the situation.

It is, thus, important to understand the distinction between the terms ‘strategy’ and ‘policy’. Strategy is defined as a means to achieve an end. Latif, Gohar, Hussain, & Kashif (2013) cited Crosby and Bryson to define strategy as a ‘well-disciplined effort to make decisions and actions that shape and direct what an organization is, what it does and why it does it’.

The term ‘strategy’ was initially used in the military to maneuver forces to the most advantageous position against the enemy. Later, the term came to be used in the corporate world and very recently, it has come to be used in the government sector as well. With respect to health sector, the WHO defines it as ‘the broad lines of action required in all sectors to give effect to health policy’ (WHO, 1981). It is formulated to achieve the objectives in an organization within the purview of the policy guidelines. In other words, a strategy is required to be consistent with policy.

A review of literature on policies revealed that the meaning of policy was not exactly the same as was implied in stating the objectives of this thesis. Harold Koontz (2010) defined policy as ‘general statements or understandings’ that assisted in decision making. Others opined (Singla, 2009) that a policy defined the limits within which the decisions were made. The Joint Learning Initiative (JLI) (Harvard University, 2004) mentioned that it was a ‘formal government statement or procedure, enacted through legislation or other forms of rule-making, which defined priorities and the parameters for action in response to health needs, available resources, and political perspectives’. According to the WHO, health policy referred to ‘decisions, plans, and actions that were undertaken to achieve specific healthcare goals within a society’ (“Health policy refers to decisions”, n. d.). An explicit health policy could achieve several things: it defined a vision for the future, which in turn helped to establish targets and points of reference for the short and medium term; it outlined priorities and the expected roles of different

groups; and it built consensus and informed people ("Health policy refers to decisions", n. d.).

Further, considering the example of blood policy, the WHO stated that the policy should include ("National blood policy", n. d.) a statement or letter of intent by the national health authority to establish and maintain a system of blood supply, the legislative and regulatory framework for the programme, define the roles, responsibilities of a national blood commission/authority, delegate defined responsibilities, where appropriate, to institutions and/or non-governmental, not-for-profit organizations which should comply with the requirements of the national blood policy, ensure financial sustainability of the programme and mention its principal sources of funding. These definitions implied that a policy for a broad area, such as health, also included objectives, strategies and overall plans, all rolled into it. For specific diseases, detailed plans were developed which included programmes.

6.2. Policies

Organizations use policies as guidelines. Policies ensure that decisions at all times remain consistent with them. Policies have a hierarchy. At the top is the charter policy. It is followed by the corporate and then the operational policies. Policies are successively derived from those which are placed at a higher level. Figure-6.1 explains the hierarchies of policies and strategies. It also shows that policies and strategies must remain consistent at their corresponding levels.

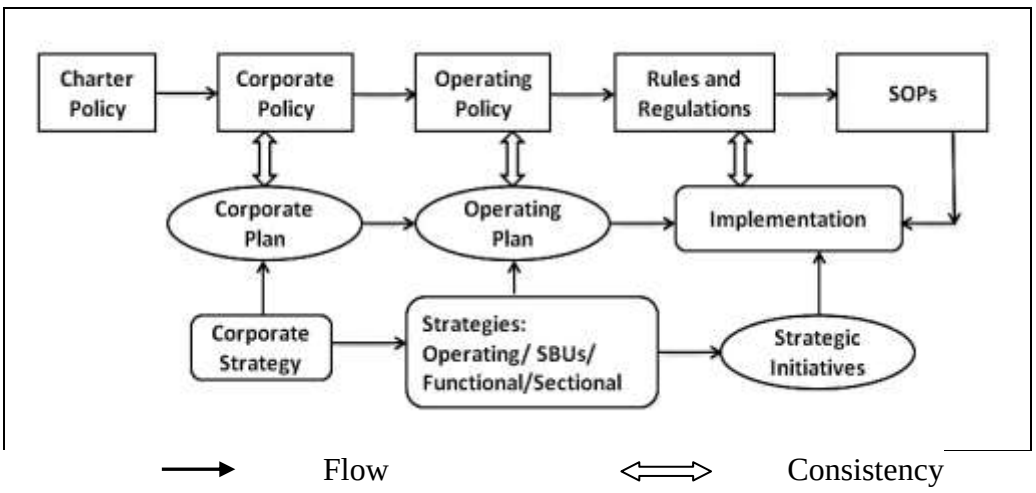

Figure-6.1: Hierarchy of Policies, Strategies and Plans

Colin's dictionary defines charter policy as "a formal document from the sovereign or state incorporating a city, bank, etc., and specifying its purposes and rights. The Charter of the United Nations is its constitution" ("Charter", n. d.). By the same logic the charter policy of a nation is its constitution. No policy in a country can be in conflict with its constitution.

Corporate policy is defined as a documented set of broad guidelines, formulated after an analysis of all internal and external factors that could affect a firm's objectives, operations, and plans. It also determines the formulation and implementation of strategy, and directs and restricts the plans, decisions, and actions of the firm's officers in achieving of its objectives. For a firm its corporate policy is its company policy ("Corporate Policy", n. d.). The corporate policy of a country is its national policy, which at all times must remain aligned with its constitution.

Operating policies are derived from the corporate policy for the specific purpose of maintaining consistency with the operating plans and, therefore, operating strategies. At the lowest level in the hierarchy of policies are the rules, regulations, and sometimes, standard operating procedures (SOPs). All these together serve the purpose of facilitating implementation of plans as intended.

Corporate policies and corporate plan and, therefore, corporate strategy, besides being consistent with each other, are also inter-dependent. While corporate policies serve as the guidelines for developing the corporate plan, which itself is derived from the corporate strategy, the policies themselves may be modified to suit the requirements of a strategy. This is equally true for the relationship between the operating policies and the sectional strategies. Once strategies have been formulated, sometimes it might become necessary to formulate additional operating policies. Take, for example, the focus area 'governance' the new policy can be such as the following:

Governance: "Political interventions, if any, must be in writing. Instructions from an official, who is only indirectly responsible for a certain function, must be conveyed in writing, except in rare circumstances where written instructions would be mandatorily issued at the first possible opportunity after the instruction orally given was executed."

"No discretionary powers shall be granted except for the highest positions in administrative units provided that these are backed by personal accountability. "

"At all decision crossroads where a choice must be made between the consumers and employees as beneficiaries, the former must get preference over the latter. For

example, no general holiday beyond those approved for employees shall be allowed if it inconveniences the general public."

Similarly, some of the essential new policies which would facilitate the implementation of the strategies could be the following. Being significant these are suitably couched in appropriate strategies or strategic initiatives.

Suggested New Policies

Corruption: "There shall be zero tolerance against all forms of corruption."

Human Resource: "A comprehensive operating policy for HR must be designed and put in place. All graduating doctors, without any exception whatsoever, must be compulsorily required to accept rural posting for a specified period."

Finance: "Both the centre and states shall contribute proportionately towards health sector financing; the share of states shall be in accordance with their GDP and absorption capacity. "

6.3. Strategies

Similar to policies the strategies also have a hierarchy. These are discussed below in the descending order (The Institute of Chartered Accountants of India, n. d.):

- Corporate Strategy (national strategy): A corporate strategy provides for attaining the corporate objectives under values and resource constraints and external and internal realities.
- Business Strategy (product divisions, strategic business units): It has to be consistent with the corporate strategy of the firm, and its operating plan must be drawn within the framework provided by the corporate plan.
- Operational Strategy (functional/sectional): The functional strategy, at the lowest level of strategy, must be consistent with the business strategy, which in turn must be consistent with the corporate strategy.

In the context of the present research, the corporate/national strategy for health is being called the Main Strategy.

6.4. Strategy Formulation Process

The steps in formulating the strategy are shown in Figure-6.2

A detailed study of the survey outputs led to the identification of a comprehensive list of problems, their causes and suggested solutions. Through a content analysis of solutions, keywords were identified and finally, through mapping, focus areas were discovered. Thus, given the objectives, there are three inputs to strategy formulation namely, Focus areas with their constituent solutions, SWOT analysis, and Demand analysis. All these inputs are taken into consideration in formulating the main strategy.

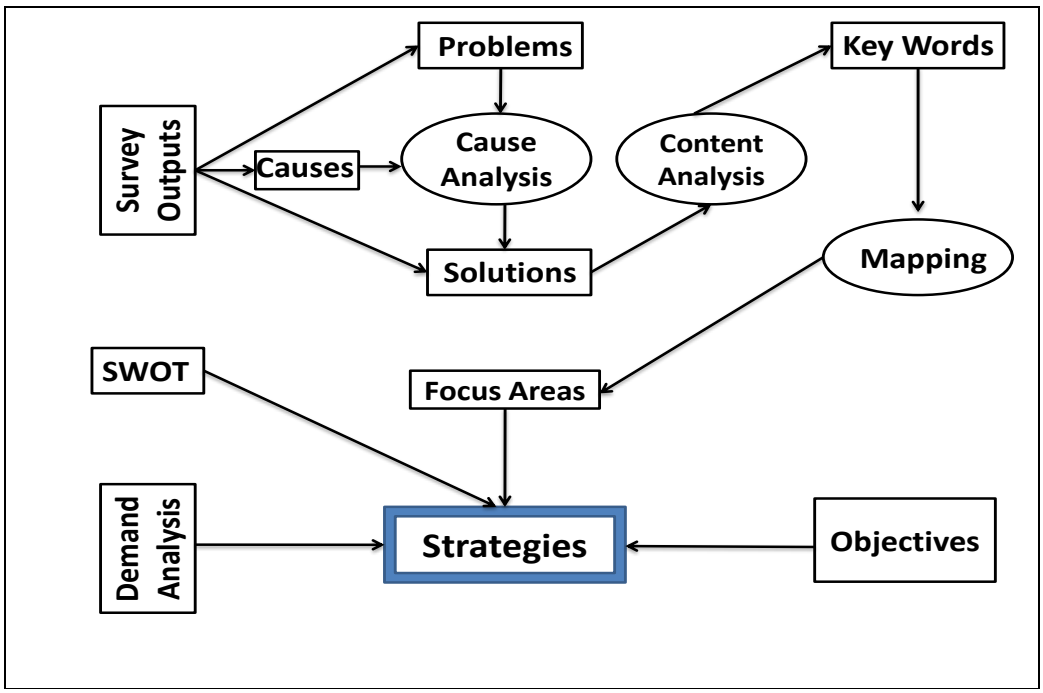

Figure-6.2: Strategy Formulation Process

6.5. Sectional Strategies and Strategic Initiatives

As shown in Figure-6.3, anchoring on the main strategy, the sectional strategies specific to each focus area were developed with due regard to the corresponding lists of specific problems and solutions. Strategic initiatives were developed based on the sectional strategies and their corresponding lists of solutions.

All final outputs, consisting of the main strategy, sectional strategies, and sectional strategic initiatives, are stated later in this chapter after subjecting them to a rigorous process of evaluation.

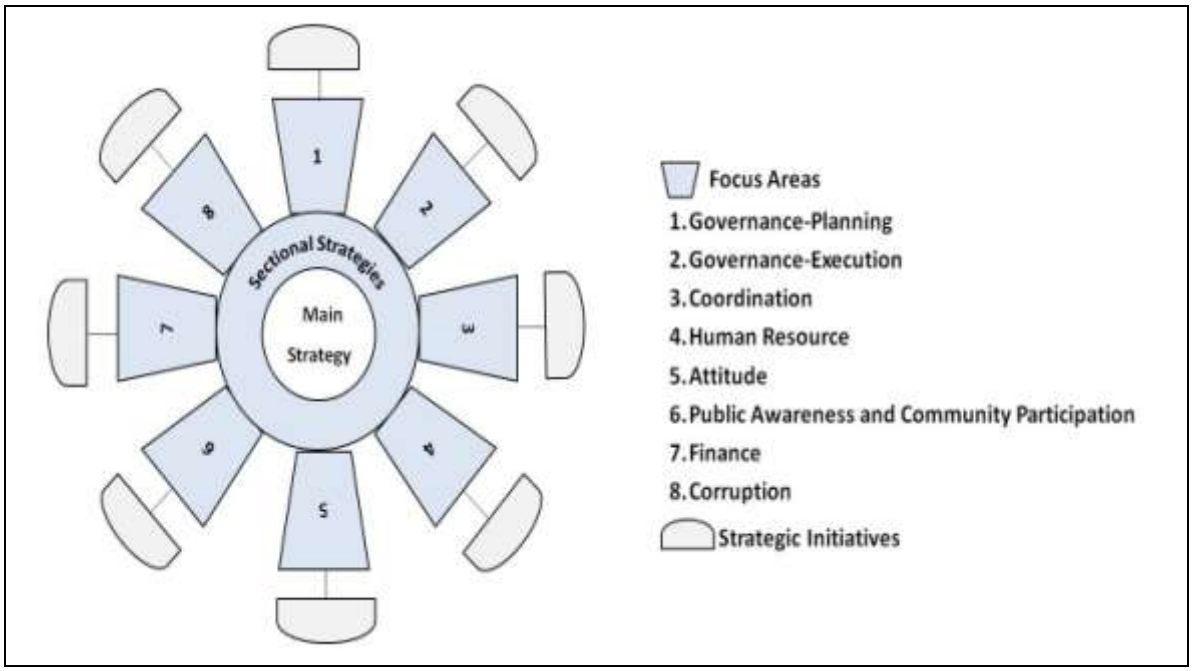

Figure-6.3: Sectional Strategies and Strategic Initiatives

6.6. Evaluation

After the strategy was formulated it had to be evaluated. Just as a hypothesis is tested against a null, the pertinent question to ask while evaluating a strategy is the grounds on which it may be refuted or rejected (Rumelt, 1979).

According to Rumelt (1979) any strategy could be evaluated using four tests, namely, Goal, Frame, Competence and Workability tests. The goal consistency test evaluates the consistency of the strategy with the goals and objectives. It is critical for the strategy to focus on the right problems and thus, in the frame test, how well the strategy has structured a situation and has separated the unimportant from the important, is evaluated. In a chosen domain, if the strategy does not address the critical issues, then it must be refuted. The competence test evaluates the strategy on the basis of whether the strategy has structured the situation into solvable sub-problems, and a way to do that is to assess it with the problems that the organization had resolved in the past and is capable of solving with demonstrated resources, competences and skills. To answer the question,

'would the strategy work', is tested by the workability test. This is done by examining the feasibility vis-à-vis the available resources. A strategy can be accepted, if it passes all these four tests.

The criteria for evaluating a strategy, suggested by Tilles Seymour (1963) and cited by Rumelt (1979), are quite similar. The appropriateness of the strategy has to be evaluated with respect to the available resources and time, consistency, reasonable risk and adequacy of results achieved. Johnson, Scholes, & Whittington (2008) in their book mentioned three criteria for assessing the viability of the strategy namely, suitability, feasibility and acceptability. Suitability is concerned with the overall rationale of the strategy, and whether the strategy addresses critical issues. Acceptability relates to the expected outcomes of the strategy, that is, the expected benefit to the stakeholders; it also considers the potential risk and consequences of the strategy. Feasibility refers to the assessment of whether the organization has or can obtain the capabilities to implement the strategy. This involves an analysis of the required resources to deliver the strategy, and the level of changes to be brought in the organization in order to implement it.

Just as the criteria for evaluating a decision is set before embarking on the process of developing the decision, the same holds true in case of formulating and evaluating a strategy. To summarize, the following were the criteria for evaluating the strategy.

- It must be clear and unambiguous.
- It must be identifiable and implementable.
- Its effectiveness must be measurable over a reasonable period of time.
- It must have the potential to accomplish the objectives.
- It must stimulate organizational effectiveness and commitment.
- It must fully exploit the opportunities available in the environment.
- It must have the levels of risks implied in them economically feasible.
- It must be consistent with the present and projected competences and resources.
- Its main provisions must be internally consistent.
- It must be consistent with the expected level of social contributions.

6.6.1. Evaluation Process

As explained in Figure-6.4, the feasibility and appropriateness of the strategies were evaluated through

- internal verification, and
- external validation.

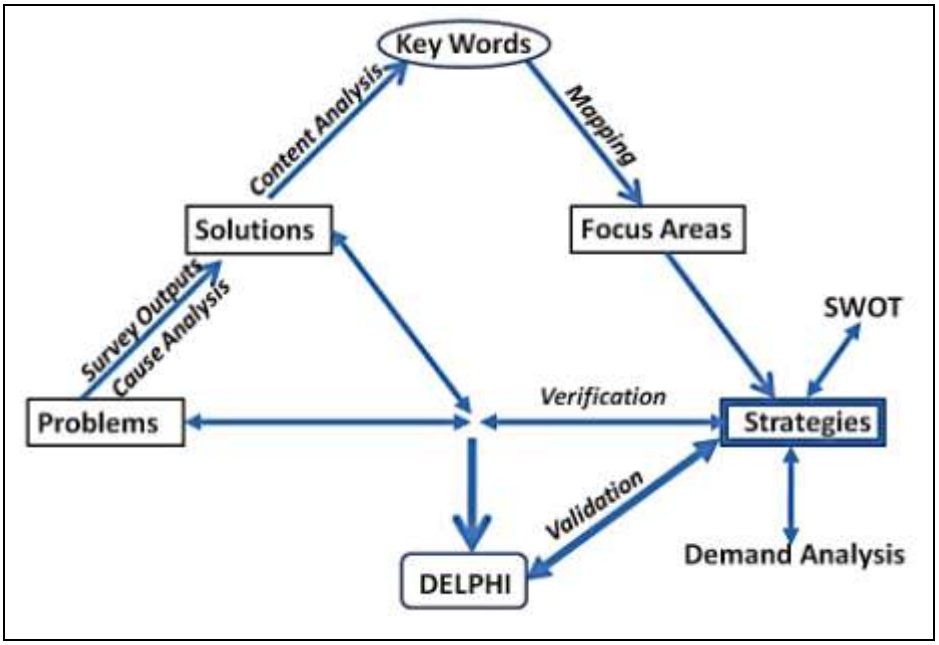

Figure-6.4: Strategy Formulation & Evaluation Process

6.6.1.1 Verification

The inputs to the set of strategies include problems and solutions (via the focus areas), demand data and SWOT findings.

First, the sectional strategies were verified against the problem-cause-solution strings for each focus area. The purpose of verification was to ensure that each problem and solution was suitably addressed by the respective sectional strategic initiatives. Demand data was ignored because, as explained in Chapter 5, it did not show any restrictive impact on the formulation of strategy or limit its choice. Finally, the strategies were verified vis-à-vis the findings of the SWOT analysis, as explained in Table-6.1. Placed towards the end of this chapter, are the lists of appropriate sectional strategies, and strategic initiatives with respect to each finding of the SWOT analysis.

It is to be noted here that certain factors identified in the SWOT analysis could not have been addressed by a strategy. There are two reasons for this. One, such factors impinge upon several sectors of the economy besides health. For example,

poverty, illiteracy, caste structures, etc., are all-encompassing social evils. Compensatory moves like special cash- or non-cash incentives such as reservations in academic institutions, employment opportunities, out-of-turn promotions in jobs, etc., are solutions, which could not have been tampered with because their areas of influence are beyond the contours of healthcare sector.

The other reason is that solutions to these factors are solely dependent on the political will and, therefore, quite outside the scope of this study.

6.6.1.2 Validation

All outputs and their verification are the outcome of the researcher's efforts. How suitable, feasible and effective the proposed strategies are, required external validation. The Delphi technique was seen as a practical and acceptable method of validation.

In the Delphi process, relevant documents are passed through a panel of several external experts. In the first step of the Delphi process documents are sent to an external expert for his evaluation. Once his comments are received, these are incorporated in the original documents, and in the second step, the new set of documents is sent to the next expert. This process is repeated until comments of the third expert are received and suitably incorporated. In the last step, the latest documents are once again sent to the first expert for his comments for the last time. Based on his comments the final validated documents are prepared. The Delphi process is explained in Figure-6.5

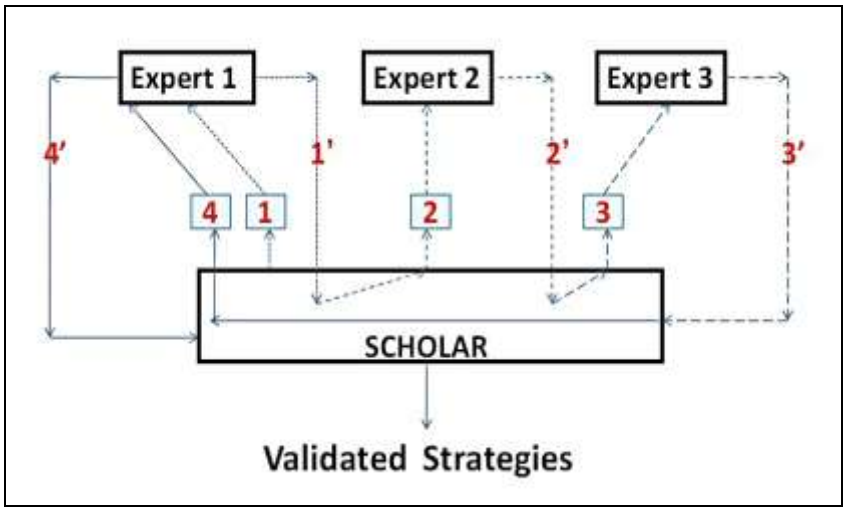

Figure-6.5: The Delphi Process

Each expert was sent three documents:

1. list of problems and their suggested solutions
2. main strategy and relevant sectional strategy
3. list of related strategic initiatives

Relevant sets of documents were sent to experts selected for the following five of the eight focus areas:

- Attitude
- Coordination
- Corruption
- Public Awareness and Community Participation
- Finance

In the case of human resource, governance (planning) and governance (execution), the lists of problems and solutions were too long to be thrust upon any one expert. Therefore, these lists were split into two parts for human resource, and four each for governance (planning) and governance (execution). In all therefore, there were 15 panels. The divisions are shown in Table-6.2

Table-6.2: Division of Focus Areas for Delphi

S. No.	Focus Areas
1	Attitude
2	Coordination
3	Corruption
4	Human resource
a	Part-1 (Availability, Placement and Training of health staff)
b	Part-2 (Policies, Administration, Appraisals, Transfers, Promotions, Progressions, Compensation, etc.)
5	Public Awareness and Community Participation
6	Finance
7	Governance-Planning
a	Part-1 (Policies, Planning, Monitoring)
b	Part-2 (Finance, Administration, Regulation, Quality)
c	Part-3 (Human Resource, Education, Training, Research)
d	Part-4 (Attitude, Commitment)

8	Governance Execution
a	Part-1 (Norms, Funds, Ownership, Commitment, Quality, Accountability)
b	Part-2 (Regulation, Enforcement, Monitoring, Supervision)
c	Part-3 (Awareness, Feedback, Implementation)
d	Part-4 (Human Resource, Roles and Responsibilities, Training, Education & Research)

As there were 15 panels, a total of 45 experts were required for validating the sectional strategies and strategic initiatives. All these experts were senior officials with substantial experience in the field of health.

A control sheet was prepared to keep a tab on the process of Delphi. The format is shown in Table-6.3, which is placed at the end of this chapter.

The complete set of strategies, which comprise the main strategy and all sectional strategies corresponding to the focus areas, are elaborated below.

6.7. STRATEGIES

Stated here first is the main strategy. It is followed by the statements of sectional strategies corresponding to each focus area.

6.7.1. The Main Strategy

To accomplish the objectives set forth for this study, India has to direct and retain its primary focus on the functions of planning and execution at all levels of governance; strengthen mechanisms of coordination within and among various sectors and departments; ensure that all its human resources involved in these processes are provided with requisite opportunities, facilities and motivation enabling them to deliver services to the best of their abilities, competence and commitment; find ways to generate finances, as may be required, to support all its current and future plans; continuously work towards building a regime of zero tolerance against all forms of corruption; regularly update public awareness through transparency in administration and timely dissemination of information about all plans and actions, and encourage community participation for sustainability of schemes and programmes; and above all else, rebuild the ethical

standards and moral values of all people of this nation through effective designing and implementation of programmes on attitude modification, beginning with educating in this context at the school levels.

6.7.2. Sectional Strategies

Some of these strategies include a few statements in *italics*. They are suggestions made by experts during the Delphi process.

A. Attitude

With a view to arrest and gradually diminish the growing apathy of a large section of service providers engaged in the healthcare sector on the one hand, and the disgust and cynicism of the service seekers among the public at large on the other, the need of the hour is to work towards replacing all round despair with hope for a better future where both the providers and users of healthcare services would genuinely recognize each other's needs and constraints and willingly cooperate to achieve overall satisfaction and happiness. For this transformation to take place it is imperative that the attitudes of people undergo suitable modifications induced by external mechanisms such as value education, focused training, awareness campaigns, etc., and preventive measures such as fear of legal actions, negative publicity, etc.

B. Coordination

Even in ideal setups fully equipped with adequate and functional resources, their efficiencies and effectiveness are hugely impacted by poor coordination within and among departments and sectors of healthcare. To improve inter- and intra-sectoral coordination, the way forward is to focus on the understanding and appreciation of the effect and impact of performing or not performing a certain activity, the quality, frequency and timeliness of communication with all individuals, groups and departments who, for a given activity, happen to be in the loop, and to expect and provide timely feedbacks to all concerned. Continuing training, reporting and evaluation of performance, combined with the timely and suitable measures of action and control, can instill a desire

to improve performance. As the implementation of strategy gets under way, the threshold of tolerance of individual and systemic failures must be progressively lowered and *the defaulters asked to explain their poor performance. The focus must be as much on identifying the defaulting individuals as on providing remedies to correct the system.*

C. Corruption

Corruption has slowly but surely eroded much of the social and moral values in the society. It has unabatedly spread over a long period at all levels across the country. There can be no strategy to provide a quick-fix solution to either arrest or control the spread of corruption. However, it should be possible to take steps to gradually contain and largely, although not entirely, control corruption. Essentially, a good strategy would ensure that the pace at which corruption is renounced would be faster than what it took to get itself established. Admittedly, this pace would be slow in the beginning but would accelerate with the passage of time.

The present state of corruption in terms of its vastness and dimension demands adoption of a four-pronged strategy to stall and progressively shrink its spread. First, the sooner e-Governance is embraced by all government offices, the easier would it be to pursue other prongs of strategy. It would bring in the much needed transparency in the dealings of the government. Effective e-Governance would also cut down the need for information under the RTI act. Second, for e-Governance to be effective it would be imperative to restrict and reduce the powers of discretion and at the same time, expand and increase accountability at all levels of administration.

Third, all laws, rules and regulations that have a role to play in identifying lawbreakers and bringing them to book, need to be studied, reviewed and modified in today's context. Absence of effective laws or loopholes in them encourages offenders to continue with their criminal conduct. Controls like laws, rules and regulations cannot become effective unless these are fortified by strict vigilance and rigorous enforcement.

Four, the public must be taken into confidence as they are the powerless and therefore, the sufferers. People feel empowered when authorities are willing to listen to their grievances, and endeavor to provide speedy redressal. Dispensing of justice – prompt, right and fair – is the cornerstone of public faith and confidence.

The four-pronged strategy suggested here has the potential to control and, to a large extent, limit the incidents of corruption. Implementation can begin only when the government is genuinely concerned about the need to tackle corruption and shows the will to do so. It implies that even when suitable acts exist, it is important that these are invoked as applicable.

D. Human Resources

The performance of healthcare units being largely dependent on the availability of qualified professionals in requisite numbers, placement of additional staff and their rational distribution in tune with the ground realities, need immediate attention. To ensure that all staff remain motivated and perform to their best abilities, all HR activities particularly in the areas of recruitment, supervision, training, appraisal, and grievance handling need to be handled with proficiency, fairness and transparency.

E. Public Awareness and Community Participation

Success of a programme depends on the involvement of stakeholders. Promoting self-reliance and getting individuals and communities at large to participate in the planning, organizing, operating and controlling of the various activities of a programme, are the imperatives for its success. Redesign and intensify IEC activities such that beyond generating mass awareness it also translates knowledge and information into action.

F. Finance

The government needs to identify newer ways to generate finances and enhance its budgetary allocation to the health sector, both for capacity building and meeting revenue expenses. Provision of additional funds will pave the way for the sector to work towards achieving the norms set by the IPHS, and establish and sustain systems for effective administration and control. As funds start flowing in, all systems that support information generation, planning, implementation, monitoring and control will have to be critically reviewed and suitably modified.

G. Governance - Planning

To address the disturbing issues of nation-wide gross imbalances in funding and investments, skewed distribution of facilities, inequity in and un-affordability of healthcare services, the government needs to devise, pronounce and publicize a workable long-term policy that can be effectively pursued to stem the all-round cynicism and trigger a mechanism to speed up reforms in all sections of the health sector. Prerequisites include a purposeful vision, a strong political will, administrative leadership and a commitment of officials that is induced entirely by the belief that their survival and progress would wholly depend on individual and group performances. Simultaneously, the government must proactively find ways to generate plentiful finances so that it may build and upgrade capacities, and guarantee and deliver healthcare services to the masses, not merely in terms of staid targets but in precise terms of quality and coverage.

H. Governance - Execution

To address the long standing issues of skewed distribution of facilities, inequity in healthcare services, and sub-optimal to ineffective service delivery, the government needs to focus on initiating management reforms in public health and other related sectors. A strong political will, administrative leadership and a commitment of officials, together with emphasis on individual and group performances are necessary pre-requisites. In addition, for quality improvement it is of essence to strengthen mechanisms for continuous monitoring, supervision and evaluation.

The main strategy together with the sectional strategies comprises the complete set of strategies. These have been verified and evaluated to confirm their potential to effectively address all problems relating to the public healthcare sector identified in this study.

6.8. Strategic Initiatives

Strategic initiatives are an interface between strategies and their implementation. Designed to close performance gaps, they help in translating strategies into action. They

are a group of finite-duration discretionary projects and programs, designed to help achieve a targeted performance (Kaplan & Norton, 2008).

6.8.1. Developing Strategic Initiatives

Strategic initiatives for each focus area were developed after taking into account their respective sectional strategies and suggested solutions, as inputs. The process is explained in Figure-6.6. Strategic initiatives were internally verified before finalization. These initiatives in conjunction with the set of strategies were then checked to ensure that they had the potential to favourably relate to all elements of SWOT, as explained in Table-6.1. All strategies and strategic initiatives were externally validated by the Delphi technique. The strategic initiatives by focus area are listed below.

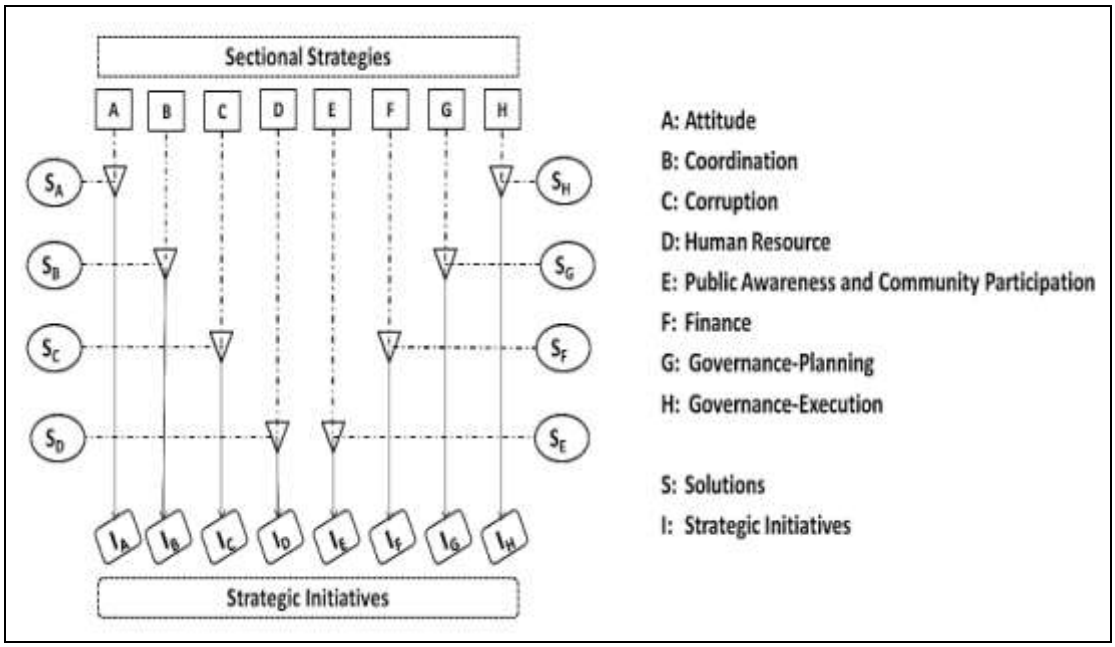

Figure-6.6: Developing Strategic Initiatives

6.8.2. Strategic Initiatives

Consistent with the sectional strategies, the following are the strategic initiatives for each focus area. Statements in *italics* are based on suggestions made by experts during the Delphi process.

A. Attitude

A.1 Planned and sustained efforts are needed to establish the sense of values, and this may be achieved by way of:

A.1.1 Imparting of knowledge side by side with evaluation and modification of attitudes.

A.1.2 Value education must begin at the earliest level of education and continue at least till the age of maturity.

A.2 For those who are already out of school, government sponsored training programmes can be conducted by specialized NGOs. Some of the essential areas to be focused on are:

A.2.1 Every asset regardless of who owns it needs to be protected.

A.2.2 Everyone involved in a project or assignment must view it as though he has a stake in it and that he must play his part diligently to make a success of it. This feeling of ownership can do wonders to every activity that one is involved in. Ownership and accountability must go hand in hand.

A.2.3 Everyone must develop a positive attitude towards community living and therefore, make every effort to live together with mutual respect and cooperation.

A.3 Encourage active involvement and participation by the public in as many areas of development as possible. Invite schools and self help groups to participate and contribute.

B. Coordination

B.1 As a long-term strategy the government needs to delink public health from medical care services so that each may develop on its own and collaborate with the other for the good of the public at large.

B.2 Similarly, by another major intervention the government must make it clear if it wishes to allow the NRHM and the Directorate of Health Services (DHS) to co-exist independently, in which case each must be informed about its domain and allowed to function with a free hand. The other option for the government is to

amalgamate the two into a new set up, or merge one with the other. The sooner the present situation of uncertainty about the areas of activity and authority of each of these arms is brought under control, the better would it be for both the service providers and users.

B.3 Individual and systemic deficiencies cannot be allowed to come in the way of performance of a group or a setup. Instead of waiting indefinitely for the best support they must be encouraged to explore alternative solutions.

B.4 Frequent short-duration meetings to iron out misgivings and promote camaraderie can help to improve the quality of coordination.

B.5 Training is a useful management tool. Beyond the functional areas, training sessions ought to include leadership skills, teamwork and such other topics.

C. Corruption

C.1 Government institutions at all levels must get themselves e-Governance enabled.

C.2 The entire education system calls for a recast to make it contemporary and free of deficiencies.

C.3 The present system of selecting heads of units in the government needs a complete makeover making it transparent, fair and reliable.

C.4 Rules and regulations that govern administrative activities need to be thoroughly reviewed, revised and strictly enforced.

C.5 Laws applicable to corruption-related cases should be strengthened with provisions for deterrent punishments.

C.6 People must be empowered to bring incidents of corruption to the notice of higher authorities; they must be encouraged, at no personal cost or risk, to pursue their complaints till conclusion.

D. Human Resources

D.1 Provide requisite staff at every unit, regardless of where it is located.

D.2 Define clearly the roles and job descriptions of all positions. Such duties and responsibilities of physicians, which can be as effectively handled by the nursing

staff, ought to be transferred to them with a view to reduce the load on physicians, and to enrich and motivate nursing staff and reduce overall manpower costs.

D.3 Ensure that all activities and decisions relating to recruitments, postings, transfers, career progressions, etc., are fair and transparent.

D.4 To address the shortfall in the supply of professionals, both the public and private sectors should be encouraged to invest in establishing of more colleges and/or increase the number of seats for admissions into the existing institutions, both at the undergraduate and postgraduate levels.

D.5 As education in government colleges is heavily subsidized, every student at the time of admission to any such college should be required to pledge

D.5.1 one (1) year of service in rural areas immediately after graduation

D.5.2 further to become eligible for private practice or to move overseas, employment in India beyond rural service, for two *(2)* years for a graduate or one *(1)* year for a postgraduate, provided that he/she no longer remains employed in government service.

D.6. *Introduce an optional integrated course for aspiring doctors, which will permit a student to complete his graduate and post-graduate education together with internship and rural service of one (1) year in an overall span of eight and a half (8.5) years.*

D.7 Provide short-term training in specialist disciplines to doctors, who are qualified only with MBBS degrees, so as to address the immediate issues relating to the shortages of specialists.

D.8 Strengthen pre-service and in-service training of medical professionals and also of personnel engaged in administration, and members of VHNSCs, RKS, etc., with focus on expanding their knowledge base and upgrading the quality,

D.9 Pay attention to locational and individual needs of professionals in respect of accommodation, drinking water, electricity supply, work environment, etc.

E. Public Awareness and Community Participation

E.1 Explore, strengthen and expand the roles of ASHAs, members of VHSNCs, PRIs, community/local leaders, RKS, NGOs, civil societies, etc.

E.2 Ensure a 2-way communication so that people get the opportunity to seek clarifications.

E.3 Emphasize awareness campaigns in schools for a lasting impact.

E.4 Take steps to promote awareness about effectiveness of generics.

E.5 Make people aware of the benefits of medical insurance, and encourage them to seek medical covers after setting aside funds for saving in banks or post offices.

E.6 Work towards convergence of IEC activities of all related departments. Make it an ongoing activity but with enhanced emphasis at the time of spread of infection.

E.7 Use resources efficiently to cover all aspects of public health.

E.8 Conduct impact assessment studies regularly.

E.9 Reinforce positive behavior change to motivate the community and help spread the message throughout the community.

F. Finance

F.1 To generate additional finances for capacity building:

F.1.1 Collect 'Health Cess' (just as 'Education Cess') @2% of after-tax profits, mandatorily from tax-paying individuals and firms, including life and health insurance companies.

F.1.2 Collect 'Health Levy' from firms such as hospitals, clinics, diagnostic centers, etc., belonging to the health sector, in case they report losses.

F.1.3 Seek compulsory contribution from the surplus generating NGOs, Trusts and other tax-exempted outfits.

F.1.4 Exempt firms from paying 'Health Cess' if they invest 3% of tax-deductible expense, entirely in the health sector

F.2 Ensure that both the centre and states contribute proportionately towards health sector financing; the share of states shall be in accordance with their GDP and absorption capacity. Provide funds for health centres in accordance with the case load handled and not bed strength.

F.3 Emphasize preventive and primary healthcare while allocating funds in the health budget.

F.4 Allocate adequate funds for research and provide financial incentive to researchers.

F.5 Encourage private sector investments both in industry manufacturing drugs, medical equipments and appliances, and also in medical education, with mutually fair riders for control.

F.6 Identify and implement suitable models for PPP where funding and management are respectively provided by the government and the private sector. Mutual trust and shared control are necessary for effective partnership and performance.

F.7 As far as financing for the development of infrastructure of SCs, PHCs and CHCs is concerned, recognize that strategies are sustainable only when the beneficiaries develop and display a sense of ownership. For every sub centre (SC) of say, 5000 population (equivalent to around 1000 families), demand Rs. 1000 from each family and subsidize the user charges, wherever payable, by 50%. The fund so generated (Rs. 10 lac) would be more than sufficient for creating the required infrastructure. The government would assume responsibility only for the salary of the medical staff; the beneficiaries would be required to take responsibility for the performance of the centre. Drugs, anyway, are now due to be provided free of cost.

F.8 Invite large organizations in public and private sectors to adopt villages or sponsor health centers in villages as part of activities under their Corporate Social Responsibilities (CSR). Many of them may be willing to financially contribute but, because of all the hassles involved, they prefer to stay away from assuming responsibility for implementation. This is one of the feasible alternatives to develop the infrastructure. Managing and sustaining the centers may remain in the hands of the government.

F.9 Encourage creation of entities which would specialize in construction and/or maintenance of healthcare centers. These firms could be permitted to accept CSR contributions as long as the funds are exclusively used for that purpose.

G. Governance - Planning

G.1 Make the health sector system-dependant so that it does not have to rely entirely on the quality/efficiency of people who manage it. This will allow officials to focus on creating and maintaining a suitable work culture. Bring in prudence and

transparency in the regulatory systems. Provide scope to correct/penalize defaulters.

G.2 Create a separate cadre for management/administration and assign people with public health background to managerial/administrative positions so that public health needs are better understood and suitably responded to.

G.3 Review and modify the Public Health Act. The Tamil Nadu Public Health Act could be used as a guide. Put in place a Hospital Registration Act.

G.4 Focus more on integration of programmes rather than on individual programs.

G.5 Declare National Institute of Health and Family Welfare (NIHFW) as a national health university, with power to grant recognition to public health institutes. The degrees from these institutes would then acquire the seal of authenticity and students would feel motivated to enter this field. Allow establishing of more colleges to augment admissions.

G.6 Promote non-clinical departments/courses.

G.7 Introduce diploma courses on 'maternal health' and 'anesthesia' so that the present shortage in these areas can be promptly addressed.

G.8 Create a council to streamline paramedical education.

G.9 Optimize the use of resources available for research. Insist on medical colleges to take up research.

G.10 Curriculum of medical education is outdated and requires radical changes. It has to be responsive to the needs of the country. It must have an enhanced focus on preventive aspects, and provide for greater orientation towards practical applications. Encourage integration of AYUSH with the modern system of medicine.

G.11 Publicize the importance of preventive measures to generate pressure from the demand side. Focus more on school-going children to create a lifetime impact.

G.12 Introduce a policy of compulsory composite posting of say for 4 or 5 years for the medical staff to serve in and graduate from Primary Health Centers to Community Health centers to District Hospitals.

G.13 Standardize all formats for generating information for the health sector, making their contents amenable to analysis and reporting.

G.14 *Bring in the concept of "Family Health-Card" for each family in the country and link it with 'Aadhar Card' & Bank Account of the family. Maintain all related*

records under an integrated MIS so that healthcare expenses incurred by each individual/family may be tracked.

G.15 *Introduce an Integrated Health Insurance Policy to cover every citizen of the country. This will help in reducing the financial burden, particularly for those belonging to the weaker sections or lower-middle classes in the community.*

H. Governance - Execution

H.1 Distribute healthcare facilities and manpower rationally for optimum utilization of health infrastructure.

H.2 For all drugs traded in the market, prescribe the quality and ensure their monitoring and control.

H.3 Provide support and supervision for maintenance of buildings, equipments and other assets

H.4. Encourage, establish and expand the use of e-system across the board so as to control manipulation, ensure transparency and reduce scope for corruption.

H.5 Institute a separate cadre of managers with postgraduate qualifications in public health or management, with or without a medical degree, to improve efficiency of service delivery in various national health programs.

H.6 Devise a policy to develop and maintain a database of NGOs operating in various parts of the country. Periodically review their performance and provide them opportunities for engagement.

H.7 Create and maintain an elaborate state-wise and nation-wide database of human resources engaged in healthcare services.

H.8 Create a database of equipments at the healthcare centers and form committees to regularly audit the status of equipment and their quality of maintenance. Replicate it in other areas as well to improve the overall quality and accountability of service delivery, like auditing of medical registers to review mortality data.

H.9 Introduce biometric system to enforce discipline, perform prescription audits and introduce a set of standard guidelines for treatment of common ailments to improve the quality of service delivery.

H.10 Revisit strategies relating to the implementation of IEC activities; include focus on schools with a view to impart health education to students from an early age.

H.11 It is essential to establish an effective two-way communication between Pradhans and ANMs; officials need to be more supportive and display a change in their mindset to actualize decentralization.

H.12. Organize workshops in association with the concerned departments and involve village Pradhans to promote people's awareness about their entitlements. Explain the risks of seeking advice from unqualified persons for treatment.

H.13 Work towards producing more doctors; insist on a policy of compulsory service in rural areas, and decide on postings and promotions on a transparent and rational basis. *To provide for rural postings consider emulating the 'Army' model.*

H.14 Allow the Medical Council of India (MCI) to be autonomous in the real sense.

H.15 Establish a separate cadre for monitoring and evaluation; simultaneously encourage third party evaluation; invite peoples' participation.

H.16 Ensure all-round improvement by frequent random checks, stricter enforcement of rules and regulations, and penalizing of defaulters.

H.17 Emphasize physical verification and third party evaluation to improve the quality of data.

H.18 In order to bring about progressive improvements in the delivery of services, provide time and resources to regularly evaluate health services and programmes, and assess their impact on the health of the masses.

Table-6.1: Verification of SWOT Analysis vis-a-vis Related Strategies

S. No.	SWOT: Narration	Sectional Strategies	Strategic Initiatives
STRENGHTS			
Buildings and Constructed Space/ Equipments & Facilities			
1	Elaborate network of healthcare facilities	B, D, H	D.1, H.1
2	Locational advantage of all healthcare buildings in the government sector	H	H.3
Human Resource			
3	Very large workforce of volunteers (ASHAs)	E	E.1
Drugs, Pharmaceuticals and Consumables			
4	Production of generics at low cost; strong manufacturing sector with domestic players having prominent international presence	F	F.5
5	Domestic capability to manufacture most medicines	F	F.5
6	A good number of FDA approved manufacturers (only second to USA)	F	F.5
Environment			
7	Near adequate number of existing laws	C	C.4, C.5
Finance and Insurance			
8	Presence of a large network of all kinds of banks, financial institutions, life and general (including medical) insurance companies	F	F.5, F.6
Education and Research			
9	Numerous medical colleges provide huge potential for pursuing research	F, G	F.4, G.9
Administration			
10	Elaborate and functional structure and system at all levels for the administration of healthcare services	B, G	G.1
WEAKNESSES			
Buildings and Constructed Space/ Equipments & Facilities			
1	Despite presence of a large number of buildings as SCs/PHCs/ CHCs, these are neither adequate nor do they function effectively	F	F.7, F.8
2	Problems of availability and accessibility of healthcare services because of a skewed distribution of healthcare infrastructure	H	H.1
3	Inadequate mechanism of regulating the market of medical devices and equipments	G	G.1
4	Equipments at healthcare centers do not match requirements as per the IPHS norms; also, their distribution is irrational	F, H	H.1
5	A lack of interest in maintaining equipments, often results in an ever increasing lot of discards	A, H	H.3
6	Poor maintenance over the years threaten the balance life of many an old building, which now require large investments towards repairs and refurbishments	F, H	F.1, H.3,

Table-6.1: Verification of SWOT Analysis vis-a-vis Related Strategies (Continued)

S. No.	SWOT: Narration – WEAKNESSES	Sectional Strategies	Strategic Initiatives
Buildings and Constructed Space/ Equipments & Facilities			
7	A lack of faith in some of the locally manufactured equipments	F, H	F.5, H.3, H.8
Human Resource			
8	Acute shortage of manpower at most of the levels of healthcare delivery	D, E, F, G, H	D.1, D.4, D.5, D.6, D.8, E.1, F.5, G.2, G.6, G.10, G.12, H.1, H.5, H.7, H.13
9	Skewed distribution of manpower	D, H	H.1
10	Absence of a uniform and effective HR Policy	C, D, G, H	C.3, G.12, H.13,
11	Inadequate HR database	H	H.7
12	Long-term retention of qualified healthcare staff in rural areas	D	D.5, D.9
Drugs, Pharmaceuticals and Consumables			
13	Difficult to coordinate and regulate the pharmaceutical sector, since it is controlled by multiple government departments	B, H	
14	Not all production of generics are of acceptable quality	C	
15	Poor supply chain management in the public sector	H	
16	Doctors are in the habit of favoring certain brands owing to collusion, inducements or networking	C	
Environment			
17	Poor enforcement of laws	C	
18	Inadequate provision of safe drinking water and sanitation	F	
19	Ineffective/lack of inter-sectoral coordination and convergence	A, B	G.1
20	Rapid urbanization of population and changing demographics has resulted in a mismatch between the requirements and distribution of infrastructure	H	H.1
21	Unsupportive work environment	D, F, G	D.8, F.1, G.1
22	Low budget allocation/inadequate public spending on health	F	F.1
23	Failure of states to utilize funds allocated under the NRHM	H	
24	Problem of fungibility with the states	F	F.1
25	Low insurance coverage	E	E.5
26	Funding is based on bed strength, etc., and not on the case load handled	F	F.2
27	Problems of tracking in centrally sponsored schemes (funds are tracked only up to their release and not their actual utilization) /dysfunctional financial control system	F	

Table-6.1: Verification of SWOT Analysis vis-a-vis Related Strategies (Continued)

S. No.	SWOT: Narration – WEAKNESSES	Sectional Strategies	Strategic Initiatives
Environment			
28	Ineffective auditing framework	H	H.4
Education and Research			
29	Regional imbalances in distribution of colleges	D, F	D.4, F.5
30	Questionable quality of several medical colleges; rapid mushrooming, inadequate infrastructure	C, H	C.2, C.5, H.16
31	Outmoded syllabi fails to address the current needs; many contemporary topics of immense value are not included	C, G	C.2, G.10
32	Lack of a research culture in medical colleges	F, G	F.4, G.9
33	Poor co-ordination between medical education and government health departments	B	
34	Paramedical education is not accorded due importance and respect	G	G.8
35	Weak infrastructure in colleges and research institutes	F, G	F.4, G.9
36	Wide-spread corruption	C	
37	Weak research and application link between industry and the academia	F, G	F.4, G.9
38	Falling standards in medical education	C, D, G, H	C.2, D.4, G.10, H.14
49	The technological approach overpowers the humanistic approach to medical education	G	G.10
40	Research does not get due importance or encouragement	F, G	F.4, G.9
Administration			
41	Inequity in the distribution of healthcare services are to an extent the result of personal preferences and political influences	G	
42	A lack of synergy between different departments directly/ indirectly affects performance of public health	B	
43	Inadequate use of IT	H	H.4
44	Corruption	C	
45	Poor attitude of people employed in the government sector	A, G, H	G.1
46	Quality standards are not clearly prescribed, communicated or monitored	H	H.2, H.15, H.18
47	Non-functional framework for accountability	C	
48	Unreliable, biased, or perfunctory appraisal of employee performance	D	
49	Excessive bureaucracy presents insurmountable obstacle to effective delivery of public health services	B, D, G, H	B.1, B.2, D.3, G.1, H.4

Table-6.1: Verification of SWOT Analysis vis-a-vis Related Strategies (Continued)

S. No.	SWOT: Narration – OPPORTUNITIES	Sectional Strategies	Strategic Initiatives
Buildings and Constructed Space/ Equipments & Facilities			
1	Commitment of the government to further improve the present situation	F, H	F.5, F.6, H.3, H.8
2	Increasing domestic market for production of devices and equipments, most of which are met through imports	C, F	C.4, F.5, F.6,
3	Untapped clusters of rural markets for setting up of laboratories and diagnostics, facilities for medical education, etc.	F	F.5, F.6
Human Resource			
4	Large population engenders massive domestic demand for healthcare services	F	F.5
5	Large employable population	D, F, G	D.1, F.5,
6	Elaborate network of healthcare centers in rural areas	H	D.1, H.3
7	Coexistence of different systems of medicine, provides varied options of employability and equally varied options of treatment to patients	G	G.10
8	Low cost qualified manpower potentially makes it possible to provide treatment to overseas patients at very competitive prices	D	
9	Low cost labor is attractive for the local and foreign manufacturers of drugs, medical equipment, appliances, etc.	C, F, H	C.4, C.5 F.5, F.6, H.2
Drugs, Pharmaceuticals and Consumables			
10	Increasing domestic focus on generics	E	E.4
11	Adequate availability of professionally qualified manpower	D	
12	Population-group transition has led to high demand for drugs, both for communicable and non-communicable diseases; massive growth of domestic as well as international markets	F, H	F.5, H.2
13	Commitment of the government to provide access to essential medicines to all at no cost	H	H.1, H.2
14	Under-used potential for IT applications	C, G, H	C.1, G.1, H.4
15	A favorite country for clinical trials because of established advantages	C	C.5
16	Huge demand for low cost, high quality generics in other countries	F, H	F.5, H.2
17	Rising purchasing power of the domestic consumers	E	E.5
18	Untapped potential of the rural markets	F, H	F.5, H.2
19	Rising importance of health insurance	E	E.5
20	Increasing consumer awareness and demand for better health services	C, D, E, H	C.6, D.1, D.6, E.2, H.1, H.9, H.15, H.16, H.18
21	Slew of existing development programmes	B, D, E, F, G, H	D.1, E.1, E.6, F.3, G.6, H.13

Table-6.1: Verification of SWOT Analysis vis-a-vis Related Strategies (Continued)

S. No.	SWOT: Narration – OPPORTUNITIES	Sectional Strategies	Strategic Initiatives
Drugs, Pharmaceuticals and Consumables			
22	Rapid economic growth	F	F.5
Finance and Insurance			
23	Availability of funds in NRHM; opportunity for states to spend and reduce the unspent budget	H	
Education and Research			
24	Medical profession being viewed as valuable, people show preference to engaging in it	B, D, G	D.4, G.6
25	Despite existence of many colleges, low doctor to patient ratio presents considerable scope for employment	D	D.1
26	Untapped potential of IT in this sector	C, G, H	C.1, G.1, G.13, H.4
27	Existence of an organized three tier infrastructure (PHC, CHC, DH)	D, F, H	D.1, H.1,
28	Considerable interest of private players	F	F.5, F.6
Administration			
29	Many involved departments, if coordinated well, can help to speedily achieve better health of the masses	B	
30	Policy of the government towards decentralization present potential to bring about the desired changes	E, H	E.1, E.2
THREATS			
Buildings and Constructed Space/ Equipments & Facilities			
1	The government has not been able to maintain its buildings. Generally, it lacked funds to do so. In course of time, because of political interests and pressures, it may end up having to hand over many such well located facilities to the private sector.	F, H	F6, F9, H3
Human Resource			
2	Private sector, lucrative in terms of salary and work environment, is very inviting for the medical and allied health workers to shift out of government healthcare set-ups	G, H	G.1, G.2, G.6, G.8, G.12, H.13
Drugs, Pharmaceuticals and Consumables			
3	Increasing uncontrolled high out-of-pocket expenditure, most of which is on account of purchase of drugs	E	E.5
4	Frequent cancelling of approvals of selected Indian drugs by the U.S. authorities	C, F, H	F.5, H.2
Environment			
5	Unbridled corruption	C	
6	Dual burden of disease	E, F	E.5, F.3
7	Absence of national pride	A, C	A.1, A.2, C.6
Finance and Insurance			
8	Growing corruption and its expanding domain in handling of finances	C	C.4, C.5, C.6

Table-6.1: Verification of SWOT Analysis vis-a-vis Related Strategies (Continued)

S. No.	SWOT: Narration – THREATS	Sectional Strategies	Strategic Initiatives
Education and Research			
9	Brain drain; qualified people are moving to other countries for greener pastures	D	D.4, D.5, D.8
10	Growing mistrust of people in the medical fraternity	A, C, D, E	C.6, D.2, E.1
11	Most private sector players are focused only on their profits, which results in large scale commercialization	C	

Table-6.3: Format of Delphi Control Sheet

FOCUS AREAS	EXPERTS							
	1		2		3		1	
Attitude	Name		Name		Name		Name	
	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Coordination	Name		Name		Name		Name	
	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Corruption	Name		Name		Name		Name	
	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Finance	Name		Name		Name		Name	
	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Governance -Planning	Part-1	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-2	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-3	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-4	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Governance - Execution	Part-1	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-2	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-3	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-4	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Human Resources	Part-1	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
	Part-2	Name		Name		Name		Name	
		D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd
Public Awareness & Community Participation	Name		Name		Name		Name	
	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd	D/Sent	D/Recd

Chapter 7

SUMMARY AND CONCLUSIONS

7.1. Research Process and Findings

7.2. Limitation of the Study

7.3. Scope for Further Research

7.4. Specific Contributions

7.5. Personal Learning from Research

7. SUMMARY AND CONCLUSIONS

7.1. Research Process and Findings

A review of secondary sources yielded considerable data to get started with the research. It helped in identifying the various healthcare components and in preparing tentative lists of problems, their probable causes and suggested solutions. The primary sources (field survey and focus group discussions) proved very useful in substantially enlarging these lists. It enriched the content and confirmed the findings from the available literature. After processing the data collected from the primary and secondary sources it was possible to identify and build a final comprehensive list of all problems that seemed to affect the healthcare services in the public sector, and their possible causes and suggested solutions.

This list was processed through a content analysis and mapping. It led to the identification of eight focus areas namely, attitude, coordination, corruption, finance, governance-planning, governance-execution, public awareness and community participation, and human resource.

The final analysis led to several important findings. The two most important of these were:

1. Amongst the eight healthcare components, 'administration' and 'human resources,' together were the source of a majority (55%) of the problems. These were therefore the most critical areas that called for immediate attention of the policy makers and program implementers.
2. The three focus areas that together appeared to have the potential to provide most of the solutions (approximately 80%) were identified as governance-execution, governance-planning and human resource, in that order.

In formulating the strategies three inputs were used: focus area wise strings of problems and solutions, demand data and SWOT findings. The demand for healthcare services was discovered to be so large as compared to the supplies that even with the most ambitious strategic initiatives it would take several decades for supplies to match demands. It implied that the demand for healthcare services would in no way have any restrictive impact on the formulation of the strategy or limit its choice. A complete SWOT analysis of each of the eight healthcare components was carried out with a view to

identify the key elements so as to favourably leverage the strengths and opportunities and constrain or neutralize the weaknesses and threats, while devising the strategies.

The main strategy for the health system in the public sector was formulated first. The sectional strategies for the focus areas were then derived from the main strategy. This was followed by devising strategic initiatives for each focus area to facilitate implementation of the strategies. The entire set of strategies, comprising the main strategy and the sectional strategies, and the strategic initiatives were internally verified and externally validated using the Delphi technique. Finally, the comments of the experts were suitably incorporated to arrive at a complete set of robust strategies.

7.2. Limitations of the Study

- The broad canvas approach in the present study generated empirical findings that were exploratory and descriptive. It only established the basis for a range of several possible hypotheses.
- This is not a comprehensive study of the entire health system in India as it excludes the facilities and performance of the private sector; rather it is a study that identified the major maladies in healthcare services in the public sector.
- The findings of a qualitative study like the present one may be limited in regard to their applicability and relevance to other types of settings. However, the observations and outputs do provide a foundation that can form the basis for planning independent focused studies in several clearly defined segments of the health sector.

7.3. Scope for Further Research

- State-wise analyses can be undertaken on the key areas of focus identified in this study so as to gather more in-depth technical and context-specific information.
- Suitable programmes can be designed for each focus area.
- A similar study can be taken up for the entire healthcare sector including the private healthcare services.

7.4. Specific Contributions

The specific outputs of this research are the following.

- It has been able to comprehensively describe the problems afflicting the public health sector in India.
- It has led to the identification of the critical areas in the public health sector which, if suitably addressed, can in good measure remedy the situation.
- The study concludes with a duly validated set of strategies and strategic initiatives for each area of focus.

7.5. Personal Learning from conducting of this Research

These can be briefly enumerated as under:

- It guided me in accessing a variety of sources, and abstracting and handling a host of information.
- It helped me enormously in improving upon my ability to conduct interviews.
- This study taught me to develop for myself a disciplined way of pursuing research.
- It opened up an avenue for me to develop a logical, balanced and systemic thinking.
- It showed me the value of patience and rigorous follow up in dealing with the Delphi experts.
- It certainly made me more knowledgeable about the field of study.
- It was a revelation to me to note that people, particularly officials, were quite enthusiastic to share their views with the researcher. They were even willing to talk about negative observations, which they would have otherwise hesitated to discuss with others in their own organizations.
- It provided me an opportunity to build a large number of contacts and relationships across the healthcare sector.
- My most important learning was that a job, however large or complex, also needs to be done; it must not discourage people from accepting the challenge because some day someone will have to do it anyway. The first output may not always the best and, potentially therefore, it can be further improved by those who follow, but it is necessary to take the first step and in the right direction.

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Appendix I

SPECIMEN QUESTIONNAIRE: Standard Format

No. _____ Date _____ Time _____Location _____

Name of the Component

Name: _____ Designation: _____

Organization: _____

Address: _____ Tel: _____
_____
_____ Mob: _____

Documents collected: Number (___) as per Attached List (No. _____)

Permission to quote comments/views/suggestions: Yes / No

Permission to include respondent in the list of contacts in final report: Yes / No

Permission of follow up meeting: Yes / No

Summary of suggestions received (listed at the end): Yes / No

Problems: (Mark with a tick if reported by the respondent or, add-on new ones)

(APK) Problems: Known
(BPN) Problems: Not Known

Causes:

(CCK) Causes: Known Problems
(DCN) Causes: Not Known Problems

Solutions:

(ESK) Solutions: Known Problems
(FSN) Solutions: Problems Not Known

Major Suggestions:

Organizations to contact

Prompt questions:

Appendix II

Prompt Questions

Common Questions

Q1. What are the possible reasons for these problems?

Q2. How do you think these problems can be resolved?

Q3. What would you suggest to generally improve the performance of the public health system?

Specific Questions

Buildings and Constructed Space

Q1. What are the major problems in the public health sector as far as infrastructure is concerned (in relation to buildings- their construction, maintenance, etc.)? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Equipment and Facilities

Q1. What are the major problems in the public health sector as far as infrastructure is concerned (in relation to equipments and facilities - their purchase, availability, maintenance, etc.)? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Q2. What problems do you face while doing business with the government departments/ institutions? Why do you think these problems exist?

Human Resource

Q1. What are the problems with respect to human resource in the public health sector? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Q2. How do you think the shortage of manpower in the healthcare system can be addressed? (Increasing the number of seats in professional colleges by itself may not help because that may affect other sectors such as finance and education.)

a) Finance: It will increase the financial burden on the government.

b) Education: With not enough teachers being available, the teacher-student ratio will be adversely affected.

Q3. There is a definite shortage of staff, particularly in the rank of male health workers. What is the reason? Are these at all being recruited? What is their exact status as of now?

Q4. Why isn't there an effective system of recruitment and placement of AYUSH doctors in spite of the proposal to integrate these within the health system?

Drugs, Pharmaceuticals and Consumables (generic and branded)

Q1. What are the major problems pertaining to drugs, pharmaceuticals and consumables in the public health sector? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Q2. Why do you think generics are not prescribed by doctors although India is the largest exporter of such drugs?

Environment

Q1. What are the major problems in the public health sector as far as environment* is concerned? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Q2. How effective is inter-sectoral coordination? How do you think this can be improved?

*** Environment – Includes the general environment as well as the legal environment.**

Finance and Insurance

Q1. What are the major problems in the public health sector as far as financing and insurance are concerned? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Education and Research

Q1. What are the major problems in the public health sector as far as education and research are concerned? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Q2. According to the General Secretary of JMFTI, it is practically impossible to manage more than 15 unregulated categories of allied health professionals/paramedical staff under the single Paramedical Council under NCHRH. Please comment.

Administration

Q1. What are the major problems in the public health sector as far as administration is concerned? Also, please mention other problems, if any, currently being faced by the public health system with respect to infrastructure or administration.

Q2. Approximately how many complaints do you receive from people about service delivery in public hospitals/their administration? Do you also cross-check with the concerned department/ ministry whether the complaint has been looked into adequately?

Q3. What kind of complaints do you receive against health department or related sectors? (May I have a copy of these complaints?)

Q4. Can complaints against the state governments also be similarly received?

Appendix III

Survey Responses vis-à-vis Problems

S.No.	Questionnaires	Sources			Field Responses (Primary & FGDs)	Field Responses (Primary & FGDs) [%]
	1.1 (Buildings and Constructed Space)	**Secondary**	**Primary**	**FGDs**		
1	Poor/Lack of facilities in public hospitals demotivate doctors and affect their performance	√	√	√	4	12.90
2	Inadequate healthcare provisions for the urban poor	√	√	√	3	9.68
3	Inadequate facilities for stay of patients' attendants	√	√	√	2	6.45
4	Tertiary care hospitals are overburdened because of non-functional and insufficient primary and secondary care hospitals	√	√	√	4	12.90
5	Most health centers are not fully functional (prescribed IPHS standards are not being followed)	√	√	√	4	12.90
6	Prior to NRHM, infrastructure was far from satisfactory but now by and large the buildings are in place. There are many shortcomings but efforts are on. Although things are not improving according to IPHS norms cent percent.	√	√		1	3.23
7	General lack of cleanliness	√	√	√	2	6.45
8	Short work hours at the healthcare settings	√	√	√	2	6.45
9	Healthcare centers are not rationally distributed		√	√	4	12.90
10	Gross civil structural inadequacies in the healthcare centers	√	√	√	2	6.45
11	Inadequate repair and maintenance of buildings		√		1	3.23
12	Sub-centers are lying dormant/non functional		√	√	2	6.45
13	Norms for health centers are based on population rather than on habitation	√			0	0.00
Total					**31**	**100.00**
1.2 (Equipments and Facilities)						
1	Lack of needed equipments at the healthcare facilities	√	√	√	4	10.81
2	Most health centers are not fully functional (prescribed IPHS standards are not followed)	√	√	√	5	13.51
3	Inadequate capacity, poor quality and weak systems for diagnostic testing and reporting in the government sector	√	√	√	3	8.11
4	Absence or inadequate provision of electricity	√	√	√	4	10.81
5	Inadequate transport facilities specially in rural and tribal regions with respect to road connectivity; insufficient ambulance services	√	√	√	2	5.41

6	Lack of care and maintenance, resulting in ever increasing lot of discarded hospital equipments/appliances, particularly in government healthcare facilities	√	√	√	11	29.73
7	Non-availability of quality devices at affordable prices to the hospitals, research institutes	√	√	√	2	5.41
8	Insufficient focus on disaster preparedness and management - including epidemics, natural (flood, earthquake, etc.) and man-made (fire, nuclear, etc.) disasters	√	√		1	2.70
9	Payments to suppliers are delayed. On an average there is a delay of 2 -6 months		√		1	2.70
10	Lack of effective resource utilization in government set ups (research institute)/hospitals		√		2	5.41
11	Lack of proper planning and maintenance of stocks. There is poor inventory control		√	√	2	5.41
Total					**37**	**100.00**
1.3 (Human Resource)						
1	Time lag between advertising of posts and actual recruitment	√	√		2	0.66
2	Process for recruitment of all cadres (e.g. doctors, ASHAs) are often not fair	√	√	√	8	2.66
3	Issue of brain drain: specially doctors and nurses migrate to other countries for more rewarding career	√	√	√	5	1.66
4	Inadequate service delivery staff, more so in rural areas; Shortage of adequately trained manpower	√	√	√	60	19.93
5	Vacant posts in rural healthcare settings	√	√	√	18	5.98
6	Under-representation of female doctors	√	√		1	0.33
7	Inadequate human resource with respect to health promotion		√		1	0.33
8	Unhindered private practice by unqualified persons	√	√	√	4	1.33
9	Absenteeism at all levels, including doctors	√	√	√	8	2.66
10	Involvement in private practice while remaining employed in government hospital	√	√	√	6	1.99
11	Overload of work	√	√	√	5	1.66
12	Shortage of male workers	√	√		4	1.33
13	Peripheral workers are specially overburdened with work resulting in dilution of efficiency	√	√		6	1.99
14	Poor quality of healthcare workers	√	√	√	17	5.65
15	Doctors posted in rural healthcare settings often lack dedication because of a lack of required facilities	√	√	√	2	0.66
16	Even people with a background in public health do not want to serve in rural areas		√		1	0.33
17	Lack of motivation, dedication and commitment among health staff	√	√	√	17	5.65
18	Paramedical workers output are below expectation despite of good salary and facilities being provided	√	√	√	4	1.33

19	Shortage of block statistical officers		√		1	0.33
20	Doctors graduating from medical colleges do not meet the healthcare requirements of the community		√		1	0.33
21	Lack of accountability, which in any case is not very clearly defined	√	√	√	17	5.65
22	Low competence of personnel involved in planning of healthcare services	√	√		3	1.00
23	Public health needs are often neglected during policy making		√		3	1.00
24	The health staff particularly doctors are involved in administrative work, resulting in dilution of responsibilities	√	√		10	3.32
25	Cannot expect the ANM to do the financials howsoever little it is		√		1	0.33
26	Lack of meaningful training and development of manpower. Given the questionable quality, the training is largely ineffective. Neither are there any regular in-service training programs nor any refresher courses.	√	√	√	31	10.30
27	Inadequate training in maintenance of computerized records	√	√		1	0.33
28	Absence of standard system for seeking feedback from staff about their training	√	√	√	5	1.66
29	Unnecessary and too much dependence on lab tests		√	√	2	0.66
30	Sometimes training gets delayed. In such instances, re-training a wrongly trained mind becomes difficult.		√		1	0.33
31	Poor appraisal system; no encouragement for those who perform well	√	√	√	14	4.65
32	Bribery	√	√	√	7	2.33
33	Poor referral system resulting in overloaded tertiary care hospitals	√	√	√	3	1.00
34	Undervalued public health cadre in states except Tamil Nadu.	√	√		6	1.99
35	Growing apathy and cynicism in the healthcare system. Also, there is erosion of ethical values at all levels in the society.	√	√	√	7	2.33
36	Absence of a human resource policy		√		2	0.66
37	Peripheral posts of IEC officers are totally abolished (Tamil Nadu) resulting in superfluous staff		√		1	0.33
38	Relocating doctors to a new area is difficult		√		1	0.33
39	No defined roles and responsibilities of health personnel; there is a lack of job descriptions (JDs)		√	√	5	1.66
40	The nature of work that the health staff are required to do are quite different from what they were recruited for.		√		1	0.33
41	ANMs do not stay at sub-centers as required		√		1	0.33
42	Doctors are reluctant to use HMIS		√		1	0.33

43	No importance given to statisticians-usually used only for review purposes		√		2	0.66
44	Lack of communication between officials at state and district levels		√		2	0.66
45	Poor quality of teachers in medical colleges		√		3	1.00
Total					**301**	**100.00**
1.4 (Drugs, Pharmaceuticals and Consumables)						
1	Drugs are not available at affordable prices	√	√	√	4	7.41
2	Poor logistics relating to distribution, handling and storage of drugs in government healthcare settings	√	√	√	9	16.67
3	The supply chain management does not include the last-in-the-line element	√	√		1	1.85
4	Presence of fake/sub-standard medicines in the market	√	√	√	4	7.41
5	Drugs made available to government hospitals for supply to patients, are sold in the black market	√	√	√	2	3.70
6	Drugs are not dispensed according to their shelf life		√		1	1.85
7	Patients are asked to purchase drugs which ought to be supplied free of cost	√		√	1	1.85
8	Irrational prescriptions by doctors	√	√		3	5.56
9	Infrequent prescription of generic medicines	√	√		5	9.26
10	Generics were perceived by people as medicines of poor quality	√			0	0.00
11	Inadequate manpower at the State and/or Central levels which hamper the functioning of the drug regulatory department	√	√	√	2	3.70
12	Inadequate/or weak drug control infrastructure at the State and/or Central levels	√	√	√	7	12.96
13	Inadequate drug testing facilities	√	√		1	1.85
14	Varying degrees of enforcement of laws and regulations with respect to drugs control	√	√	√	2	3.70
15	Lack of training of drug regulatory officials	√	√		1	1.85
16	Lack of data base in drug regulatory departments	√	√		1	1.85
17	Inadequate IT services in drug regulation	√	√		1	1.85
18	Price control is applicable only on a few drugs	√	√		1	1.85
19	Focus of government on L-1 affects the quality of drug purchase		√	√	4	7.41
20	Problems of delayed payments combined with the complex procedure balk many competent suppliers, leading to inferior supplies and corruption by unscrupulous government officers		√	√	2	3.70
21	At present, DPCO includes molecules which were earlier supplied by the multinationals; indigenous supplies may not be of the same quality		√		1	1.85

22	Bureaucrats, responsible for formulating procurement policies, have their own priorities, which breed corruption		√		1	1.85
Total					**54**	**100.00**
1.5 (Environment)						
1	Lack of concerted effort in combating environmental pollution (air, water)	√	√		4	7.41
2	Food adulteration	√	√		1	1.85
3	Rampant use of pesticides	√	√		1	1.85
4	Inadequate provision of safe drinking water	√	√		10	18.52
5	Improper waste handling and disposal (general household wastes and hospital wastes)	√	√		4	7.41
6	Inadequate toilet facilities in rural areas	√	√		8	14.81
7	Some Acts are not comprehensive enough, thereby giving rise to several problems in administration	√	√		1	1.85
8	Plans for modernization do not factor in environmental degradation		√		1	1.85
9	People do not have a sense of community living		√		1	1.85
10	Even if the toilets are constructed, these are not used		√		1	1.85
11	A lack of community participation	√	√	√	7	12.96
12	Any change is often opposed by the community		√		1	1.85
13	There is no voluntary demand from rural people for toilets		√		2	3.70
14	Awareness of people about diseases is very low; community awareness is low particularly about Maternal and Child Health issues.		√		3	5.56
15	Lack of focus on occupational health		√		1	1.85
16	In difficult geographic terrains, accessibility of services is an issue		√		6	11.11
17	Gender discrimination in availing of treatment; male members get preference		√		1	1.85
18	Declining trend in sex ratio (approximately @ 2 percent)	√	√		1	1.85
Total					**54**	**100.00**
1.6 (Finance and Insurance)						
1	Low budget allocation to health, including research	√	√	√	12	34.29
2	State allocations on healthcare are usually affected by the fiscal stress they encounter. This sector has been plagued by instances of inefficiencies at several levels, resulting in waste, duplication, and sub-optimal use of scarce resources.	√	√		1	2.86
3	Most of the state budget is apportioned to secondary & tertiary care services leaving much too little for primary & preventive healthcare services	√	√		2	5.71
4	Budgets are over-/under-spent	√	√		3	8.57

5	The percentage of population who seek health insurance cover is very low	√	√	√	4	11.43
6	High out of pocket expenditure (cost of personal healthcare is too high for individuals to bear)	√	√	√	2	5.71
7	Not much can be achieved in a year because of problems of funds flow from centre to state		√		1	2.86
8	Fiscal incentives given to the states inadvertently weaken public health systems	√	√		2	5.71
9	Utilization certificates not received despite repeated follow up		√		4	11.43
10	Monthly reports are not submitted to NRHM as required		√		1	2.86
11	Poor budget management because of shortage/incompetence of people		√	√	3	8.57
12	Insured patients were directed, without medical reason, to go for procedures like appendectomy, hysterectomy, etc.	√			0	0.00
Total					**35**	**100.00**
1.7 (Education and Research)						
1	Rapid mushrooming of private colleges, many of which are of questionable quality	√	√	√	7	12.50
2	Inadequate number of teaching staff	√	√	√	15	26.79
3	Exorbitant fees for medical and allied health education in the private sector	√	√	√	3	5.36
4	Very few institutes providing public health programs	√	√		1	1.79
5	College admissions provide a huge scope for corruption	√	√	√	6	10.71
6	Disproportionate distribution of medical colleges (rural-urban disparity)	√	√	√	3	5.36
7	Doctors and nurses today are given technology based education rather than preparing them as promotive/preventive care specialists for masses		√	√	2	3.57
8	Content of medical curricula is more curative than preventive.		√		1	1.79
9	Engagement in research is not as valued as employment in clinical areas		√		1	1.79
10	Lack of motivation among students to join public health cadre		√		1	1.79
11	Public Health as an area is not adequately covered in the medical curricula		√		1	1.79
12	PG seats remain vacant in PSM		√		1	1.79
13	Job opportunities in public health are not many		√		1	1.79
14	Paramedical education does not receive due focus from the government		√	√	3	5.36
15	There is no system of continuing education for the teachers in medical colleges to periodically update their learning and knowledge	√	√	√	2	3.57
16	No change in medical curriculum for the past 50 years		√		1	1.79

17	Field education component in medical education unlike in the past has since been discontinued		√		1	1.79
18	Research, if any, in teaching institutions is only in name		√		1	1.79
19	India does not have a research friendly environment		√		1	1.79
20	Research in medical colleges is not orientated towards public health issues. There is hardly any worthwhile research output.		√		1	1.79
21	Lack of quality research in improving therapeutics or providing affordable treatment for masses	√	√		3	5.36
Total					**56**	**100.00**
2.0 (Administration)						
1	A lack of adequate intra- sectoral coordination	√	√	√	2	0.67
2	A lack of inter-sectoral co-ordination, non-existent co-ordination between medical education & health departments,	√	√	√	17	5.69
3	Ineffective supervision, monitoring and evaluation have resulted in inefficient use of resources. Consequently there is no fear of being held accountable	√	√	√	29	9.70
4	There is no act specifically for the domain of public health	√	√		1	0.33
5	Ineffective legislation	√	√	√	7	2.34
6	People are not adequately aware of their entitlements in respect of drugs, diagnostics, referral transport and other services, free deliveries at public health facilities, etc.	√	√	√	10	3.34
7	There is a lack of ownership of government programmes	√	√		2	0.67
8	Requirements of quality standards are not prescribed	√	√	√	4	1.34
9	No prescribed standards for treatment protocols, over/mal-treatment, over-diagnosis, etc., for service providers	√	√		2	0.67
10	Quality of care needs improvement	√	√	√	2	0.67
11	Poor quality of services provided in healthcare settings, more so in rural areas and in public hospitals	√	√	√	5	1.67
12	There is no standard system for redressal of complaints from users	√	√	√	5	1.67
13	Absence of mechanism for feedback from the users	√	√	√	2	0.67
14	Inequity in the distribution of healthcare services	√	√	√	6	2.01
15	The approach to healthcare is fragmented and not comprehensive	√	√		2	0.67
16	Health is a state subject: policies are made at the centre while implementation remains a state responsibility. The upshot is a lack of ownership, frequent problems in implementation, and failure in local adaptations of central programs.	√	√		10	3.34
17	Not all aspects of public health receive due importance in health promotion activities	√	√		1	0.33

18	Poor/ineffective advocacy of public health issues	√	√		1	0.33
19	People do not trust government for quality services; perception of poor quality affects demand	√	√	√	6	2.01
20	No perceptible use of data gathered from various studies/ reports that are made/ statistics that are collected by Govt./private/others/individuals	√	√		2	0.67
21	The data received may not always be authentic, accurate or reliable		√	√	5	1.67
22	Sourced data is not validated before it is fed into HMIS.		√	√	2	0.67
23	Under-rated data management system		√		1	0.33
24	There is more focus on numbers rather than on quality as far as reporting is considered.		√	√	2	0.67
25	Inadequate focus of government in emerging areas, as a result of which opportunities still remain to be fully exploited	√	√		2	0.67
26	Problems tend to be prioritized in accordance with those of international organizations	√	√		2	0.67
27	Ineffective regulations	√	√	√	10	3.34
28	Inadequate administrative commitment	√	√	√	5	1.67
29	Too much of political interference	√	√	√	5	1.67
30	Decentralization of administration has not benefited much (e. g. PRIs, VHSCs)	√	√	√	23	7.69
31	Corruption is as prevalent in this sector as in any other sector	√	√	√	25	8.36
32	Amalgamation of Public Health and Medical care services undermines the importance of Public Health	√	√		1	0.33
33	The public health policy agenda (developed at the centre) is not appropriately shared with the concerned stakeholders such as unions, consumer associations, professional associations, community organizations, or NGOs	√	√		1	0.33
34	Absence of comprehensive view of all health related NGOs operating in India	√	√		1	0.33
35	In the results framework document (RFD), the indicators suggested for evaluating the results are neither appropriate nor are they reviewed and modified as required	√	√		1	0.33
36	No separate department of Public health		√		1	0.33
37	Chasm between NRHM and other health services.		√		25	8.36
38	Stand alone approach: lack of convergence tends to create operational hazards		√		1	0.33
39	NRHM is perceived as a structure parallel to DHS		√		1	0.33
40	Even after NRHM came into existence, the previous practice of vertical programs is still continues whereas these should have been integrated		√		2	0.67

41	No permanent record of patients like health cards are maintained in government hospitals or healthcare centers		√		2	0.67
42	Frequent transfers of administrative people often leads to changes in priorities		√	√	1	0.33
43	People heading organization lack vision		√	√	6	2.01
44	Medical staff are required to take charge of procurement, maintenance, etc., which are beyond their competence		√		5	1.67
45	Government is not seen as pro-active		√		1	0.33
46	Most people feel safe in maintaining 'status quo'		√	√	1	0.33
47	People holding administrative posts at state and district level lacks leadership skills		√	√	4	1.34
48	Clarity in communication is often lost in the long chain between the top and the bottom		√		4	1.34
49	Without doing any meaningful study or research, unnecessarily, there is mere increase in number of programs. It results in overburdening the healthcare personnel who have to execute these. In the process, the quality and deadlines also gets compromised		√		1	0.33
50	Government officials are not sensitized enough about public health issues.		√		1	0.33
51	Ineffective process of planning		√		1	0.33
52	Often PHCs are promoted to CHCs only in name		√		1	0.33
53	In the 21st century, we are still struggling to combat water borne diseases	√	√		1	0.33
54	Implementation of IEC activities is not effective	√	√	√	7	2.34
55	Not enough IEC activities in relation to family planning		√		1	0.33
56	At administrative level officials remain busy in so many meetings and find no time to study reports on progress or an introduction of a new program		√		2	0.67
57	Posts are not created even when activities expand		√		1	0.33
58	There are no dental programs for the masses	√	√		2	0.67
59	Unregulated private practice		√	√	2	0.67
60	No system in place to question the government if they do not provide what ought to be provided		√		1	0.33
61	Most of the health programs are center initiated, whereas health being a state subject it is the states which must initiate more programs		√		1	0.33
62	Government had made programs target free but still targets are asked to be achieved		√		1	0.33
63	Expenditure in health sector is not treated as an investment for good health		√	√	4	1.34
64	There is always a tussle between technocrats and bureaucrats		√		2	0.67

65	Training is given adequately but retaining trained staff is a problem		√		1	0.33
66	The organization is headed by people from administrative background and not public health		√		1	0.33
67	All or none phenomena is followed in health sector. Focus is on single and not multiple programmes/issues at any given point in time		√		1	0.33
68	Only tertiary level care gets visibility		√		1	0.33
69	More focus on curative vis-à-vis preventive services		√		2	0.67
70	Authorities given do not match responsibilities		√		2	0.67
71	There is no policy on health promotion which is a vital component of public health		√		1	0.33
72	There is no culture of analyzing the gaps between the resources at hand and those required		√		1	0.33
73	Access to services is a big area of concern. Skewed distribution of healthcare facilities in rural and urban areas.	√	√	√	2	0.67
74	Reporting formats are frequently changed		√		1	0.33
75	There are too many formats to report data		√		1	0.33
76	Officials more inclined towards meeting targets than focusing on performance		√		1	0.33
77	Available manpower is not optimally distributed/used		√		6	2.01
78	Mainstreaming of AYUSH has not been effective.		√		2	0.67
79	Officials lack training in grievance handling		√	√	2	0.67
80	Salary structures of different cadres of health personnel across states lacks uniformity		√	√	3	1.00
81	People involved in supervision neither have the requisite skills nor any time		√		1	0.33
82	Mentoring is inadequate		√		1	0.33
83	There are no post-training formats to record acquisition of new learning		√		1	0.33
84	In the absence of standard systems, officers develop their own methods; sub-ordinates on their part find it difficult to adjust		√	√	2	0.67
85	The top level lacks ownership		√		2	0.67
86	Seniors are too level conscious to mix with juniors		√		1	0.33
87	Some expensive equipments are allowed to be used only in presence of a supervisor; such a restriction limits the utilization of the equipment		√		1	0.33
88	Often certain guidelines cannot be followed because of the constraints posed by the ground situation		√		1	0.33
Total					**299**	**100.00**

List of Publications

Singh, P., Bose, B., & Charde, S. (2015). Analysis and Compatibility of Source-wise Identified Problems in the Health System. *International Journal of Basic and Life Sciences, 3*(2).

Singh, P., Bose, B., & Charde, S. (2015). User opinion on issues afflicting health system in the public sector. *Sage Publications*. (Accepted for publication as conference paper publication-International Conference and Summer School on "Public Health Infrastructure in Transition: Challenges and A Way Forward" (February 16th-20th, 2015) at Jamia Millia Islamia, New Delhi.

Singh, P., Bose, B., & Charde, S. An Approach to Developing a National Strategy for the Public Health Sector in India. *International Journal of Health Services.* (Communicated)

Biography of the Supervisor

Prof. Bhaskar Bose

Professor Bose completed his B. Tech. (Hons.) in mechanical engineering from IIT-Kharagpur, an MBA from the Asian Institute of Management, Manila, Philippines and a Doctor of Philosophy in Management from Birla Institute of Technology and Science, Pilani. He is a Fellow of the Institution of Engineers, and a life member of the India Society of Engineers, and the Aeronautical Society of India.

An eminent consultant in management he has prepared reports for a large number of clients in India and abroad, including the World Bank and the UNIDO. He was also an Advisor to the Western Australian Trade Office, Govt. of Western Australia. At present, he is the President of International Eye Bank, Kolkata, and Patron of several NGOs.

Prof. Bose has been actively involved in delivering invited lectures and teaching courses at several universities and institutes. He has guided several students towards their Ph.D. He also guided nearly 150 semester-long dissertations for final year students of engineering, management and public health. He was nominated as a Distinguished Professor by the Indian National Academy of Engineering. He has been an Advisor to a few universities of technology in India. His areas of expertise include strategy formulation, perspective planning, organization restructuring, marketing research, systems design and training.

Biography of the Co-Supervisor

Dr. Shrikant Y Charde

Dr. Shrikant Charde completed his B Pharm from Nagpur University and did his M Pharm and Ph.D. from BITS-Pilani. He also completed a PG Diploma in Patents Law from NALSAR, Hyderabad.

He is associated with BITS-Pilani since 2001. He is at present the Head of the Department of Pharmacy at the Hyderabad Campus of BITS. His areas of interest are: Novel Drug Delivery Systems with special emphasis on transmucosal drug delivery and nanotechnology based delivery systems, Analytical and Bio-Analytical Method Development and Intellectual Property Rights. He is currently guiding four Ph.D. students and has supervised projects of more than 75 B. Pharm and 30 M. Pharm students.

He is a life member of the Association of Pharmaceutical Teachers of India and Controlled Release Society, Indian Chapter. He has completed various industrial and government sponsored projects. Dr. Charde has published several technical reports, research papers, and attended several conferences at national and international level.

Biography of the Candidate

Pallavi Singh

Pallavi Singh is currently a DST-INSPIRE fellow working towards her Ph.D. in Public Health Management. A dentist by profession, she completed her Bachelor of Dental Surgery (BDS) and thereafter qualified as a Master in Public Health from the Birla Institute of Technology and Science (BITS-Pilani). At present, she is involved in the study of problems and issues in the delivery of healthcare services in India and in identifying the factors that affect the functioning and performance in the public sector. She has presented papers in both the national and international conferences, and is a life member of the Indian Association of Public Health.