Chapter IV

METHODOLOGICAL DESIGN AND FRAMEWORK
INTRODUCTION:
This chapter presents the methodological foundations and issues that are pertinent to this study. The detailed objectives and hypotheses are listed in order to draw focus on the effect of the independent variables that have been considered in this study. Independent variables have been chosen on the basis of their actionability and usefulness for quality interventions in future. Some variables have been studied for the first time in order to bring out new insights. The dependent variable "inpatient service quality" has been described and the methods of analysis have been discussed. The research design has been presented and the methodological issues have been analyzed. The procedure for construction of the various research instruments prepared for this study - hospital service quality, patient involvement, perceived severity of illness - has been described. The sampling framework and inclusion and exclusion criteria, data sources, and methods of analysis have been presented.

4.1: RESEARCH OBJECTIVES
Aims: Situation analysis, diagnosis of problem areas and instituting a services marketing approach to the inpatient health care delivery services of a teaching public hospital. The following were the study objectives:
1. To identify the factors or domains that describe inpatient service quality.
2. To study the relationship between patients' expectations and perceptions of hospital service performance.
3. To identify the service quality gaps and make an in-depth study of patient, employee, institution and process factors that contribute to these gaps by studying the relationship between patients' service expectations / perceptions and the following:
   • Patient related factors:
     a) demographic characteristics - i) gender, ii) education, iii) location
b) *psychographic characteristics* - i) perceived severity of illness or health-related quality of life, ii) patient involvement in health care

c) *service purchasing behaviour* - i) history of previous hospitalization, ii) payment status

- Provider characteristics like responsiveness, empathy, and other behavioral aspects of doctors, nurses, and other contact employees:

d) hospital employee known to patient

- Process factors like access, admission procedures, investigation facilities, core and peripheral services, outcomes and discharge process:

e) facilities provided free of cost to patients

f) clinical outcomes

- Institutional: infrastructure, image, teaching / research functions.

4. To study the relationship between expectations / hospital performance perceptions of patients and doctors' views on patients' perceptions.

5. To identify the determinants of inpatient service quality.

6. To study the perceptions of main contact employees: doctors/ nurses.

7. To make suggestions based on the findings of the study.

**4.2: RESEARCH HYPOTHESES:** Derived from the objectives, the following twelve sets of research hypotheses were proposed and tested.

1. **EXPECTATIONS / PERFORMANCE** (Obj. # 2)

   **H₀:** There is no difference between patients' expectations and perceptions of hospital performance.

   *For objectives 3 and 4, a hypothesis set is of two parts: one for patients' expectations and the other for patients' perceptions of hospital performance.*
PATIENT RELATED FACTORS: a) Demographics: (Obj. # 3a) Gender

2. **H₀ 1ai**: There is no difference between the expectations of male and female patients.

   There is no difference between the hospital performance perceptions of male and female patients.

**Education**

3. **H₀ 1aii**: There is no difference between the expectations of patients with no education, low level of education and higher educational level.

   There is no difference between the hospital performance perceptions of patients with no education, low level of education and higher educational level.

**Urban / Rural Locations**

4. **H₀ 1aiii**: There is no difference between the expectations of patients from urban and rural areas.

   There is no difference between the hospital performance perceptions of patients from urban and rural areas.

**Psychographics**: (Obj. # 3b) Perceived Severity of Illness

5. **H₀ 1bi**: There is no difference between the expectations of patients with low severity of illness and high severity of illness.

   There is no difference between the hospital performance perceptions of patients with low severity of illness and high severity of illness.

**Patient Involvement**

6. **H₀ 1bii**: There is no difference between the expectations of patients who show low involvement and those who show high involvement in their own care.

   There is no difference between the hospital performance perceptions of patients who show low involvement and those who show high involvement in their own care.
Purchasing Behaviour: (Obj. # 3c) History of Previous Hospitalization

7. $H_0\ 1ci$: There is no difference between the expectations of patients based on the history of previous hospitalization for the same health condition.

There is no difference between the hospital performance perceptions of patients based on the history of previous hospitalization for the same health condition.

(Four possible combinations of outpatient / inpatient care and private hospital / government hospital treatments are considered: Private Outpatient care, Private Inpatient care, Government Outpatient care, and Government Inpatient care.)

Payment Status for Service

8. $H_0\ 1cii$: There is no difference between the expectations of patients who pay for the service and those who avail the services free of charge.

There is no difference between the hospital performance perceptions of patients who pay for the service and those who avail the services free of charge.

PROVIDER BEHAVIOUR: (Obj. # 3d)

Hospital Employee Known / Unknown to Patient

9. $H_0\ 1d$: There is no difference between the expectations of patients who knew any hospital employee and those who did not know any hospital employee.

There is no difference between the hospital performance perceptions of patients who knew any hospital employee and those who did not know any hospital employee.
PROCESS FACTORS: Facilities Provided Free or Priced: (Obj. # 3e)

10. $H_0 1e$: There is no difference between the expectations of patients based on whether all facilities are provided free of charge or some priced.

There is no difference between the hospital performance perceptions of patients based on whether all facilities are provided free of charge or some priced.

Clinical Outcomes (Obj. # 3f)

11. $H_0 1f$: There is no difference between the hospital performance perceptions of patients with positive clinical outcomes and negative clinical outcomes.

(Four possible clinical outcomes have been taken and grouped into positive and negative outcomes: Positive - cured or relieved, Negative - status quo or worse.)

PROVIDERS' INSIGHT INTO PATIENTS' PERCEPTIONS (Obj. # 4)

12. $H_0 4$: There is no difference between the expectations of patients and doctors' perceptions of patients' expectations.

There is no difference between the hospital performance perceptions of patients and doctors' views on patients' perceptions.
Figure: 4.2: Factors influencing Patients’ Expectations & Perceptions

PATIENT RELATED FACTORS

PATIENT DEMOGRAPHICS
Gender, Edu.Level, Location

PATIENT PSYCHOGRAPHICS
Illness, Severity

PATIENT CHRONOGRAPHICS
Pt. Involvement

EXCEPTATIONS 
AND
HOSPITAL PERFORMANCE
PERCEPTIONS 
OF PATIENTS

HOSPITAL RELATED FACTORS

PROVIDER BEHAVIOUR
Hospital Employee Known / Unknown to Patient

PROCESS FACTORS
Facilities Clinical Provided Free Outcomes

Source: Original: prepared for constructing the study hypotheses.
4.3: RESEARCH DESIGN

This is a cross-sectional, analytical research into the determinants of in-patient service quality perceptions of the external and internal customers of a teaching public hospital. This study was conducted using the survey method.

The study was carried out in two parts:

- **PART I:** Statistical study to find out the determinants of hospital service quality from the patients' and physicians' perspective.
- **PART II:** Descriptive exploratory study to identify some of the organizational factors contributing to performance of the principal contact employees: physicians and nurses.

4.4: SOURCES OF DATA

The study was based on primary data collected from the participants. Secondary sources were used mainly as background material for choice of respondents.

**Secondary Data Sources:**

Secondary data was taken from the hospital records. Details of in-patient statistics such as the bed strength, department-wise bed occupancy for the clinical departments selected for the study, admission data for the past five year period, and ratio of special ward to general ward admissions were used in sample selection. Patient Case Records, Ward Registers, daily Discharge list and Summaries, were some of the records scrutinized for collecting the background data for conducting the study. Further, as part of the service process, the nature and duration of contact of the inpatients with various types and levels of hospital employees, was ascertained after discussions with contact employees drawn from the Medical Records Department, Laboratory Technicians, nursing personnel and doctors.
**Primary Data Sources:**

Primary data was collected from the external customers of the hospital i.e., in-patients, and the internal customers or the main contact employees, viz., the consultant doctors and nursing personnel. The study was restricted to inpatients for practical reasons of accessibility to patients who have already experienced many of the service components of the hospital. Patients' willingness to spare their time for participating in the study was another major factor in selecting the inpatient population for the study. Doctors and nursing personnel were found to be the primary care givers or contact employees as far as inpatients were concerned. The other contact employees like the technicians, cleaning staff, ward staff, and administrative staff had limited interaction with patients as part of the service process.

The following section presents the methodology adopted for carrying out the two parts of the research study.

### 4.5: METHODOLOGY FOR PART I

Part I of the study was done in two phases. Phase I was concerned with the development of the research instrument for the measurement of in-patients' perceptions. Phase II involved administration of the instrument to a sample of in-patients and consultant physicians of the hospital.

#### 4.5.1: RESEARCH APPROACHES

Any study of determinants of hospital service quality can be approached from two design angles: a) community based study and b) hospital based study.

**Community based studies** involve acquiring a list of patients from the hospital, inviting groups of patients for focus group discussions and conducting the survey by administering the questionnaire or instrument by
mailing it to the homes of the respondents. This method has been found to be cost-effective, less time-consuming, and has facilitated taking up very large sample sizes ranging from 500 to more than 4000 customers. Moreover, researchers have hypothesized that respondents are likely to be more willing to give honest feedback if surveyed outside the provider's premises, especially if their experiences with the service provider have been negative.

Many researchers in the West have adopted the method of mailing questionnaires to former patients of a hospital system in order to find out their level of satisfaction and perception of service quality. This is possible if the population being surveyed is literate and educated enough to comprehend the questions and meaningfully record their responses. As the present study was conducted for a public hospital serving a very less educated patient population, mailed questionnaires could not be adopted as the method of data collection. This entailed personal interviews as the appropriate method for obtaining respondent perceptions. Further, as the geographical distribution of the patients was spread over all the southern states of India, although predominantly from the neighbouring state of Tamil Nadu, a community based household survey would be logistically unwieldy.

In addition to the practical difficulties in choosing a field based method, the conceptual issue of relying on the respondents' memory to track their experience with the hospital is open to question. The "recency" of the service encounter has to be considered as an important input in designing such studies. Such studies may help in measuring generic expectations from hospitals as a whole as the respondents may have had service encounters with various health care providers for different purposes and with differing outcomes. The "purity" of the responses as pertaining to service encounters with a specific provider cannot be determined. Thus,
retrospective falsification can occur in any measurement method that takes place after the elapse of time from the service encounter.

**Hospital based studies** involve the survey of patient perceptions in the hospital setting itself. The strength of these studies is the significantly higher response rates as compared to those done outside the hospital setting. The conceptual issue here is that this design is transaction specific and refers to the service experience perceptions of patients about their current admission to the hospital. Selection of a large sample nullifies this transaction effect to an extent. Further, a study spread over a longer period, say a year, can also make the results more broad-based. Ford et al (1997) support the gathering of feedback before the patient leaves the service encounter to ensure that information is captured while it is still fresh in the patient's mind and can be used to recover from a service failure if a quality problem is discovered.¹

The present study has been carried out over a period of one year on a statistically large sample. The service provider characteristics have also been stable with no major changes in top management, added facilities and equipment, and no natural or other occurrences - any or all of which might have affected the type of clients and mode and quality of service delivery.

In hospital-based studies, some researchers have adopted a two-step process. They have measured patient expectations on arrival or admission and performance perceptions on discharge (exit pro-forma). Respondents have been defined to be the patients themselves or the key attendant. The hospital under the present study does not officially permit attendants to stay with inpatients except under special circumstances (surgery) and absolute necessity (psychiatry and paediatrics). Therefore, this setting requires that the patients alone be considered in defining the respondent
group. Further, "biases are associated with the use of proxies as a patient's relatives or proxies rank care more negatively than do patients themselves." (Ford, Bach and Fottler, 1997) ² Visitors or observers gave higher ratings to facilities-related quality, while users or patients gave a less critical view of the human factor dimension. (Oswald et al, 1998) ³ Being a referral hospital, many of the patients, on admission, are not in a physically fit condition to respond meaningfully on most issues except the immediate and dominant felt need to get better or cured of their condition. During the initial phase of interviewing patients in order to collect information on items to be included in the survey instrument, the typical response of patients just admitted was about the primacy of the need to get better and no other factor about the hospital stay was of consequence. Studies have also suggested that consumer views sought before treatment may be influenced by the fear that negative comments may affect subsequent treatment. Therefore, a two-step process for obtaining patients' responses was eschewed in favour of a one-step interview just prior to discharge from hospital. Although this timing has also been criticized as views could be influenced by the "gratitude factor", this limitation has been overcome to some extent by the researcher being external to the system and stating the fact of not being an employee of the hospital. On the other hand, during the study, some respondents looked upon the interview as an opportunity to express their honest views and ventilate their feelings. Patients' responses on expectations as well as hospital performance being recorded on discharge in the form of exit interviews, is therefore, more convenient, feasible and efficient and has been adopted as the method of study.
4.5.2: RESEARCH INSTRUMENTS

A. Service Quality Dimensions and Determinants / Predictors:

Other than the most commonly used self-completed questionnaires, in-depth interviews, focus groups, the Critical Incident Technique for identifying key favourable or unfavourable experiences, observation at waiting areas, suggestion schemes and formal complaint mechanisms have also been adopted to study service quality.

In this study, in-depth interviews in combination with the critical incident technique have been used for obtaining insights into patients' perceptions. This combination was found to be most appropriate for the clientele of this hospital, gave more complete information as it involved qualitative as well as quantitative information, and ensured high representativeness of views as well as high response rates. In-depth interviews yielded information that was quantified using a Likert scale and questions on critical incidents gave many qualitative insights of patients' experiences. "A two-tier approach using both qualitative and quantitative methodologies increases the validity and reliability i.e. utilizing qualitative approaches in order to develop a quantitative tool." (Hickey et al, 1998)  

Focus groups could not be conducted owing to space constraints for an appropriate setting away from the wards or bedside of the respondents. Although a formal complaint mechanism is provided at this hospital, most of the respondents were unaware and indifferent to its existence and were sorting out differences as and when they occurred, with satisfying as well as dissatisfying results. This could be due to the low educational level of the patient population of this hospital.

Dimensions:

The details regarding the construction of the primary research instrument to identify the determinants of service quality of the hospital have been described as the steps in phase I of the study. The theoretical approach
has been the Expectations and Perceptions measurement proposed by Parasuraman, Zeithaml & Berry (PZB). Dimensions have however been derived from a factor analysis of the expectation scores of patients participating in the study.

No agreement exists in the literature as to which scores - expectation, perception or difference scores - should be factor analyzed to test for the dimensionality of the quality concept. PZB used the difference scores with the explanation that they have been used in developing other scales. The use of difference scores was questioned, as their psychometric properties are not known. Expectation scores should be factor analyzed, as they are not influenced by possible flaws in the service rendered by various firms in the industry. (Vogels et al) A comparative study found that a non-difference direct single item score measure had better psychometric properties than the paired-item difference-score formulation of SERVQUAL (Brown, Churchill, and Peter, 1993). Factor analysis of perception scores is suggested as beliefs or expectations measured together with perceptions in one administration of the questionnaire can be of little value. In addition, there is a close relationship between expected service performance and previous or current experiences (Carman cited in Vandamme and Leunis, 1992). However, this argument has already been addressed by the explanation that consumers use experience-based norms for service products. Moreover, in a highly intangible service like health care, past experience is a very valuable input that consumers use in forming realistic expectations from a service provider. (Cadotte et al, 1987) The current study has used expectation (E) scores for the factor analysis to identify the dimensions of hospital service quality.

**Determinants / Predictors:**

For deriving the determinants or predictors of service quality of the study hospital, the Perception (P) score has been used. Here again the P-E gap
score raises a logical inconsistency that a consumer who expects and receives poor performance will be satisfied (LaTour and Peat, 1979 cited in Spreng et al, 1996) 10 The superiority of the Perceptions only measure from a predictive validity standpoint has been supported. (Parasuraman et al, 1991; Babacus and Boller, 1992; Cronin and Taylor, 1992) 11-13 The present study has therefore used the patients' Perceptions (P) score of hospital performance for multiple regression analysis.

Scale Width:
A five point Likert scale has been used with 5 indicating "strongly agree", 1 indicating "strongly disagree" and 3 indicating neutrality. A three point scale would have given inadequate options, while a seven point scale (used by PZB) would have demanded a high level of sensitivity and discrimination that would have been difficult given the very low educational status of the primary respondent group. Babacus and Mangold (1989) also used a five-point scale in the health care setting.14 Researchers have used five-point or seven-point scales without getting into the methodological aspects, but just following on earlier studies. Unless we are addressing a highly aware and sophisticated group of consumers, the sensitivity provided for by a five-point scale is sufficient and meaningful enough for a situation like healthcare. As most consumers do not have full knowledge and expertise and their discriminating ability can at best be average, a matching scale width of five points has been used.

B. Perceived Severity of Illness:
"How a person experiences the pathological process, what it means to him (her), and how this meaning influences his (her) behaviour and interaction with others are all integral components of disease viewed as a total human response." (Lipowski, 1969) 15 Thus patients expectations and perceptions of a hospital could be influenced by their perceived severity of illness. An
indicative measure of this was taken as one of the independent variables in this study.

A survey of literature revealed disease specific measurement scales - for cancer, cardiac, chronic ailments, rheumatoid arthritis, AIDS, etc. The scales were further classified based on acuity and chronicity depending on whether the symptoms were immediate and intense or persistent over a long duration respectively. None of these scales could be generically applied to illness in general.

The Nottingham Health profile (Hunt, McKenna and McEwan, 1989) is a measure of perceived health, the Sickness Impact profile (Bergner, Bobbitt, Carter, et al, 1981) that measures the impact of disease and impairment on daily activities and behaviour, and the MOS SF-36 (Ware et al, 1992) that measures the disability or functional status were examined and found to be generic, but very time-consuming. Moreover, these measures have been developed in the UK and North America and have not been translated for use in other settings, especially developing countries like India. Taking up this work is beyond the scope of this research as the focus here is on the perceptions of patients on hospital service quality. Perceived severity of illness is to be used for a limited purpose as a background independent variable whose impact on these perceptions is to be studied rather than using the variable for making decisions on treatment options or other clinical decisions.

On the other hand, quality of life measures included perceived health related position. The most generic instrument is the WHOQOL covering physical health, psychological state, level of independence, social relationships, environmental factors, personal beliefs and spiritual domains. The WHOQOL is a 100-item questionnaire comprising of four questions for each of 24 facets grouped under the six domains. A shorter version with 26 items has been developed as the WHOQOL BREF, Field
Trial Version in December 1996. The instrument has been standardized initially across fourteen countries including India, later expanded to twenty-three countries. This scale has been recommended for using quality of life as an outcome measure in research on the relative benefits of different treatment methods.\(^{19}\)

The Quality of Well-being (QWB) Scale (Kaplan, Anderson and Ganiats, 1993)\(^{20}\) and the General Health Policy Model (GHPM) (Kaplan, 1994)\(^{21}\) considers the impact of health status on mobility, physical activity, social activity and symptoms or problem complexes. These scales incorporate many details about the illness as they are recommended for use for deciding on treatment options or choosing between options that have an impact on the quality of life of patients.

Dansky and Miles (1997) have measured perceived severity of illness using just one topical question. They have asked respondents to estimate the severity of their current illness or injury (SERIOUS), using a Likert-type scale with ratings from 1 (very serious) to 5 (not at all serious). \(^{22}\)

**Scale Items:**

Based on the survey of literature and the available instruments, for obtaining an indicative measure of perceived severity of illness, eleven questions were framed on aspects including extent of physical discomfort, anxiety, social disadvantage, hampering of daily activities - mobility, self care, sleep, food / eating, dependence on relatives, dependence on medication, disability in performing occupational role, and overall rating of the effect of illness. The respondent was asked to indicate his answers to each question giving the perception of the intensity of impact. The responses were scored on four points: 1 - minimal / none, 2 - mild, 3 - moderately severe, and 4 - very severe. The summated score was taken as the perceived severity score for each respondent. Thus, it was theoretically possible to obtain a minimum score of 11 and a maximum
score of 44. Perceived severity of illness was thus a continuous variable that could take the values ranging from 11 to 44. For purposes of comparative analysis, the mid-point score of 27 was taken and patients were classified into "low severity" group (scores 11 to 27) and "high severity" group (scores 28 to 44).

C. **Consumer Involvement:**

A keyword search using standard search engines on the Internet revealed that the terms healthcare consumer involvement, participation, cooperation, and responsibility all bring out the same results. The terms seem to be used synonymously in the health care situation. All the searches led to lists of rights and responsibilities: what consumers can expect from healthcare providers, and what consumers should do to maximize their benefits and satisfaction from service encounters with healthcare providers. There were no specific instruments to measure the level of such involvement. Therefore, the researcher has evolved a basic framework to assess involvement. Developing on the concept of "involvement" with cognitive (information processing), affective (motivation and locus of control) and behavioural (overt actions) components and constructing an instrument for measurement can by itself become a topic for research and it was not considered to be within the scope of this study. This section presents the researcher’s attempt to obtain an indicative estimate of patients' involvement in their own care by using information and behavioural inputs.

In the services sector, it is important that consumers as well as employees be educated in service delivery. By informing consumers how they can enhance the benefits they receive from a service encounter, increased satisfaction is promoted together with quality of service. (Christopher Lovelock, 1980) Consumers should be taught how to perform their part of effective, high quality, efficient, satisfying service interactions. They
should be selected and categorized based on their ability to perform specific desirable functions. (Bowen, 1986)\textsuperscript{24} Patient behaviours such as giving complete and truthful information, explicitly stating their expectations, and voicing their complaints, participation through expressing choice and self-administration of medications, compliance by keeping appointments and follow-up advice, and in general, relating positively to caregivers can promote satisfaction. How patients and family members behave can affect the efficiency, profitability of service delivery, quality of care, their own satisfaction and employee satisfaction. (MacStravic, 1988)\textsuperscript{25}

In this study, Consumer Involvement has been considered as an important input variable that can influence hospital service quality perceptions. Moreover, the provider can evolve programs to influence involvement whereas little can be done to alter the demographic background of consumers. Thus, involvement is a useful and actionable variable for study. Health care is a service that demands participation from the consumer in terms of communicating about the illness, compliance with diet and drug regimens, maintaining a health promoting environment, learning about the illness, taking the initiative and sharing responsibility for choice of treatment options and better post-discharge compliance.

*Scale Items*: Various behavioural parameters of patients have been considered such as:

a) Communication - trying to know about health condition, asking for information, asking for help whenever necessary, knowing about prescribed diet, knowing post-discharge or follow-up requirements.

b) Participation - self-care and regular maintenance of personal cleanliness, keeping own things and surroundings clean, initiative in self-service wherever possible without depending on nurses or other staff for every need.
c) Compliance - following diet restrictions, following instructions regarding treatment, knowing and abiding by hospital rules.

d) Promotion - health promoting behaviours like being cheerful and positive, helping other patients.

Depending on the degree of presence of these behaviours, the researcher's judgement, and observation was used to rate patients on a scale of one to five on seeking knowledge of illness, knowledge of post discharge requirements, cleanliness of person, maintenance of surroundings, self-help initiatives, helping other patients or hospital staff. While the other items could be assessed independently by the researcher, the knowledge items were verified by questioning the patients on basic information that they could be expected to know about the health condition for which they were treated. Hospital case records and discharge summaries available at each patient's bedside were used in order to decide on the information content for the questions. Descriptive knowledge was considered as sufficient for this purpose; technical aspects were not insisted upon. In general, patients were expected to know their diagnosis, the tests and procedures that they had undergone, medication and diet advice, and discharge and follow-up advice. On summation of the six items, a patient could theoretically score a minimum of 6 and a maximum of 30 points. The summated score was taken as the Involvement score for each patient respondent. For multiple regression analysis, Involvement was thus obtained as a continuous variable that could take values ranging from 6 to 30. For testing of hypothesis, the patients were defined as High Involvement group based on a score of 18 and above (≥ 60%), and Low Involvement group on score below 18 (< 60%).

**D. Clinical Outcomes:**

The clinical outcome or health status of the patient respondents at discharge was taken from the case record and Discharge Summary of
each patient. Scores 0 to 3 were given for outcomes worse, status quo, relieved, and cured respectively. It should be noted here that these were actual objective outcomes as recorded by the doctors and not the patients' perceptions of their condition at discharge. Recording perceptions of outcome of hospitalization is neither prudent nor feasible, as most hospitals tend to keep patients for just enough time to get cured or relieved. Medically, this is the recommended practice in order to avoid patients contracting hospital-based infections especially in the absence of exclusive or private wards. From the demand and capacity management angle, this is the practical option when demand for inpatient beds exceeds supply as in the case of government hospitals. Convalescence and full recovery can take place gradually at the patients' home.

Clinical Outcome was thus obtained as a categorical variable that could take the values 0, 1, 2, or 3. The scores 0 and 1 were taken as negative and 2 and 3 as positive outcomes.

4.6.1: PHASE I: DEVELOPMENT OF RESEARCH INSTRUMENT

The following were the steps in the development of the research instrument for survey of in-patients' perceptions:

1. As described in the section on literature survey, a search of CD-ROM databases of Business Periodicals, Medline, WHO Bulletins and Reports, and a physical search of journals that were not accessible electronically, was carried out in order to find out the extent of existing literature. A comprehensive list of ninety-nine questionnaire items pertaining to various aspects of hospital service quality perceptions was obtained from this exercise.

2. As a dip-stick survey, five consultants from the major clinical departments of the hospital viz., medicine, surgery, obstetrics &
gynaecology, were interviewed to find out the suitability of the list of items generated from literature and to elicit items that may be specifically relevant to the setting under consideration.

3. Depth interviews were conducted with forty in-patients admitted under various clinical wards or departments to ascertain the suitability and relevance of the items generated. Items that patients felt were difficult to comprehend were modified and items that they considered irrelevant to the setting viz., a public sector teaching hospital and the background of the clientele, were removed from the list. The list of items thus elicited consisted of sixty items.

4. As recommended by many researchers, who had surveyed patients' perceptions within the hospital setting, all the items were deliberately kept uni-directional in being positively worded (Babacus and Mangold, 1989, Tomes and Ng, 1995) keeping in mind fatigue in responding to a mix of positive and negatively worded questions. A patient getting discharged from hospital may be free of illness (outcome 'cured' or 'relieved') or referred to another hospital (outcome 'status quo' or 'worse'). In both cases, respondent fatigue is an important consideration, as the person has not yet attained a full sense of well being and normal health.

5. The Perceptions and Expectations Model of service quality proposed by Parasuraman, Zethaml & Berry was used to record patients' Expectations from the Hospital and Perceptions of Hospital Performance on each of the items included in the research instrument. The statements of expectations were worded as, "A good hospital / doctor / nurse / support staff should .................". The statements of
performance perceptions were worded as, "This hospital is / doctors / nurses / staff of this hospital are.............." A five-point Likert scale with a score of 5 indicating the response 'strongly agree', 1 indicating 'strongly disagree', and 3 indicating 'neutral' was used to record the responses.

6. The sixty-item questionnaire was personally administered to sixty inpatients drawn proportionately from various departments or wards of the hospital. As most of the patients were illiterate or had very low education levels, the questionnaire was personally administered following the interview format.

7. The expectation scores were subjected to Factor Analysis using the Statistical Package for Social Sciences (SPSS). First the sixty items were factor analysed using Principal Component Analysis. Factors with Eigen value greater than 1 and a cut-off score of 0.5 were then rotated using Varimax rotation with Kaiser normalization. This resulted in a scale consisting of thirty-seven items classified under six Factors or Dimensions. The six sub-scales were tested for internal consistency by using Cronbach's alpha scores and were found to be highly consistent. At the end of Phase I, the thirty-seven item research instrument was thus constructed. The details of results are presented in Chapter V Part I giving the findings and analysis of patients' perceptions.

4.6.2: PHASE II: SURVEY OF IN-PATIENTS EXPECTATIONS AND PERCEPTIONS OF HOSPITAL PERFORMANCE

1. The thirty-seven item questionnaire was administered by the personal interview method, to one hundred and thirty in-patients admitted in various departments and wards of the hospital. The inclusion and
exclusion criteria for selecting respondents are presented under the Sampling Plan.

2. In addition to the demographic background of the respondents, details regarding the history of current illness, perceived severity of illness in terms of relation to life quality, and level of involvement of the patients were also obtained so as to get a complete picture of the situation. These details also provided more value as actionable independent variables as compared to a descriptive demographic profile alone.

3. The Expectation and Performance scores given by patients were analyzed to find out the service quality of the hospital on the various parameters or dimensions.

4. Twenty-five consultant doctors were asked to complete the same questionnaire from the point of view of a majority of their patients. Thus the doctors' insight into the expectations and performance perceptions of the patients was obtained and this was compared with the respective scores given by patients in order to identify the gaps if any, between the two.

5. The Performance perception scores given by patients were subjected to Multiple Regression Analysis in relation to the independent variables - demographics, perceived severity of illness, consumer involvement, clinical outcome, and other factors considered in the study to determine the predictors of service quality of the hospital.
6. In addition to the statistical treatment of the quantitative data, qualitative information revealed by patients during the depth interviews was recorded separately.

4.6.3: **DURATION OF THE STUDY**

The study of patients' perceptions was conducted over a period of fourteen months from July 1999 to August 2000. Phase I was completed in July-September '99 and Phase II was conducted during the period November 99 - August 2000. The three months July - September is a non-vacation period wherein all the consultants (they hold teaching designations, have teaching and research responsibilities and are eligible for annual vacations) are available. The November - August period includes two - vacations: one fortnight in December / January and one month in May / June. In general, fifty percent of the consultants are not available during the vacation periods. The other members of their Units or Teams - in addition to their own workload - look after their inpatients also. The study period thus covers all the normal service provider situations that are characteristic of a teaching hospital.

4.6.4: **SAMPLING PLAN**

The sampling plan for Part I consisted of two sets of samples i.e., a sample of in-patients and a sample of consultant doctors. 

**PATIENT SAMPLE**

A proportional stratified sampling strategy was used to obtain a sampling frame from the target population whereby the number of subjects obtained from each stratum was directly proportional to that stratum's relative population size. Stratification was done using the following bases: past admission data, type of ward, gender of respondent, and day of admission
discharge. Patients were assigned numbers based on these criteria and lots were drawn to choose the specific respondents on a daily basis.

1. **Admission data:** Average number of patients admitted under the various clinical departments over the past year was found out by scrutinizing the hospital records for the past five years. The average number of patients admitted was calculated as a percentage of the total and a proportionate number was chosen from each department considered for the study.

2. **Wards:** The overall proportion of free beds to priced beds i.e., General and Special Wards respectively, was considered in selecting the sample.

3. **Gender:** Equal number of male and female patients were included from all other departments except obstetrics & gynaecology, which obviously admitted only female patients.

4. **Admission Day:** Care was taken to obtain a random sample by choosing patients admitted or discharged on different days of the week under different consultant doctors. This was done to ensure that perceptions could be obtained about the services of all the Clinical Service Units consisting of specific teams of doctors, postgraduate residents and nurses.

4.6.5: **INCLUSION AND EXCLUSION CRITERIA**

1. **Age of Respondent:** The patient sample included respondents who were above eighteen years of age, who were in a physically and mentally fit condition to directly communicate about their out-patient and in-patient service experience in the hospital.

2. **Clinical Service Departments:** Patients admitted under the departments of Medicine, Obstetrics & Gynecology, Surgery, Orthopedics, ENT, Ophthalmology, Dermatology, Cardiology, Urology,
Dental Surgery, and Plastic Surgery were surveyed. Patients of the departments of psychiatry, pediatrics, TB and chest diseases, and cardio-thoracic surgery were excluded from the study on the basis of age and / or fitness to respond.

3. **Timing of Interviews:** Patient interviews were conducted only once during their hospital stay for recording both expectations and performance perceptions. Although ideally, it is advisable to record expectations on arrival and performance on discharge, only patients who were to be discharged from the hospital (Exit Interviews) were interviewed. This was done to ensure more objective information, less respondent fatigue and more efficient use of time and space available in the hospital setting given the large number of patients being served.

4. **Duration of Hospital Stay:** Patients who had stayed for a minimum duration of seven days in the hospital were surveyed to yield more complete information. Patients who had stayed for less than seven days were excluded from the study.

5. **Employees and Dependents:** Hospital employees and their dependents and very close relatives were excluded from the sample in order to obtain unbiased responses. This criterion resulted in a sizeable proportion of patients admitted to special wards being excluded from the study. (A separate analysis of special ward admission data was done at a later stage of the study in order to examine the question of access to special wards.)

4.6.6: **SAMPLE SIZE**
The sample size was fixed keeping in mind the strata and criteria. A total of 230 in-patients were interviewed: 40 patients for generating the questionnaire items, 60 for standardization of the research instrument, and 130 for studying the patients' expectations and perceptions of hospital
performance. Out of 130, 103 respondents were able and willing to give complete information.

4.6.7: **DOCTORS' SAMPLE:**
All the consultants (Assistant Professors, Associate Professors, Professors and Director Professors) of clinical departments from which the patient sample was drawn were included in the survey. Out of 33, it was possible to obtain the responses from 25 doctors.

4.6.8: **DATA ANALYSIS AND STATISTICAL TOOLS**
The survey instrument was constructed and factors identified by computing Cronbach’s alpha scores followed by factor analysis using varimax rotation with Kaiser normalization. Multiple regression and correlation analysis was used to arrive at the predictors of service quality. The scores of expectations and perceptions of performance were used for measure of service quality. Percentages, measures of central tendency and dispersion, the two-tailed t-tests for paired data and for independent samples and one-way ANOVA were used for testing of hypotheses. The standard SPSS package Version 7.5 was used for the statistical analysis. Depth interview findings were analyzed for obtaining the qualitative insights.

4.7: **METHODOLOGY FOR PART II**
A Descriptive exploratory study to identify some of the organizational factors contributing to performance of the principal contact employees: physicians and nurses. This study consisted of obtaining responses from doctors and nurses about their perception of the organizational culture and role efficacy respectively. This was undertaken to ascertain the organizational context in which the hospital services were being delivered by the two main groups of contact employees for any in-patient.
4.7.1: RESEARCH INSTRUMENTS:

A. Organizational Culture: "Targeted Culture Modeling"

Organizational culture is defined as an organization's values, decision-making processes, allocation of resources, division of power, the behaviour it requires, and the level of risk that is allowed and encouraged. (Vestal, Fralix and Spreier, 1996) Organizational health is a quasi-enduring state of physical, mental, and social well being of an organization. An organizational health assessment should be a prelude to any serious organizational change or intervention. (Dutta Roy and Ghose, 1997)

Two approaches have been used to assess the health of organizations. The end state approach places emphases on the assessment of economic parameters like profit or loss of the current and previous years. (Sood, 1987; Bidani and Mitra, 1983) The process-state approach gives importance to behavioural parameters like motivational and leadership processes. Dutta Roy (1992, 1996) has studied organizational health patterns for manufacturing organizations. Dutta Roy and Ghose (1997) report the first such study conducted for hospitals - a public hospital in Calcutta, India. Their 56-item questionnaire covers the following areas: physical environment, organizational awareness, autonomy, participation, organizational performance, coping with environmental uncertainty, organizational need satisfaction, environmental awareness, satisfactory relationships with task agents.

Organizational culture is the critical link that integrates the organization's core competencies, its critical success factors, the competencies of its people and its critical roles and processes, and transforms strategic intent into superior performance. Fifty-six behaviours and activities that help differentiate an organization's culture have been identified and an Organizational Assessment Tool instrument has been constructed. These attributes range from being highly organized, maintaining clear lines of
authority, and providing secure employment, to building strategic alliances with other organizations, adapting quickly to changes in the business environment, and being flexible and adaptive in thinking and approach. *Process cultures* in healthcare focus on quality, service and customer satisfaction. *Time-based cultures* focus on decreasing cycle times and increasing speed-to-market changes, *network cultures* capitalize on integration and creating networks, partnerships, and strategic alliances. The traditional, hierarchical setups emphasizing discipline, order, security and entitlement are *functional cultures*. *Targeted Culture Modeling* gives an audit of the 'current' and 'desired' organizational characteristics of the US Department of Veterans Affairs and identifies the gaps between the two. (Vestal, Fralix and Spreier, 1997) 35

The *Organizational Assessment Tool* instrument was adapted for this study as it was found to suit the purpose of identifying the areas that needed change within the context of a public hospital. This instrument consists of 56 items that seek to measure the functional, process, time-based, and network orientation of the hospital from the point of view of the caregiver group - doctors. Each item is scored twice on a three point semantic differential scale: once for current status and the second time for targeted status. The distinction between targeted and desired / ideal culture is that the former is anchored on realistic and achievable levels of organizational attributes.

B. **Nursing Role Efficacy Scale:**

Purohit and Pareek (1993, 1995) have developed a structured instrument consisting of 30 items for measuring the perception of the nursing role in a hospital. Role Efficacy is seen as consisting of 10 aspects: Integration, Pro-activity, Creativity, Confrontation, Influence, Growth, Inter-role Linkage, and Helping. The ten aspects have been grouped under three dimensions: Role Making (Self-role Integration, Pro-activity, Creativity,
Confrontation), Role Centering (Centrality, Influence and Growth), and Role Linking (Inter-role Linkage, Helping Relationship, Super-ordination). As opposed to the descriptions of these positive role perceptions, the negative counterparts are Role Taking (Role Distance, Reacting, Routine, Avoidance), Role Entering (Peripherality, Powerlessness, Stagnation), and Role Shrinking (Isolation, Hostility, Deprivation). Each item is rated on a five-point scale, indicating the degree of agreement based on nurses' experience in the hospital.  

4.7.2: Organizational Culture Assessment by Doctors

Twenty-five doctors filled out an organizational assessment tool that described their current and desired organizational culture. The "Targeted Culture Modeling" questionnaire developed by Vestal, et al (1997) was used for this purpose. The questionnaire was self-administered after an initial briefing by the researcher.

- Descriptive analysis of the current versus desired status of organizational culture was done in terms of the various sub-dimensions of the scale.

4.7.3: Nursing Role Efficacy

- Seventy nursing personnel working at various levels of the nursing hierarchy were administered the Nursing Role Efficacy Scale developed by Purohit & Pareek (1995).

- As it was not possible to contact nurses in the wards without disturbance to their work, classroom interfaces were arranged by the Nursing Tutors of the hospital for facilitating access to groups of nurses working at various levels of the hierarchy and at various shifts. The contact time was during the General Day Shift, one contact session per respondent and the period of contact was spread over from November 1999 to June 2000.
The scale was self-administered after an initial briefing by the researcher. In addition, details regarding the components and nature of the nursing workload were collected. The responses were analyzed descriptively to arrive at the role perceptions of nurses on the various dimensions of the scale.

4.7.4: **DATA ANALYSIS**

Descriptive analysis using statistical measures like arithmetic mean, geometric mean, standard deviation, and percentages were used and the results are presented in the form of graphs and tables.

**CONCLUSION:**

The methodology for this study has been evolved as a cross-sectional, analytical, hospital-based research. Part I studies the perceptions of inpatients on hospital service quality and Part II that of key contact employees: doctors and nurses, on the organizational context for service delivery. For Part I, the methodological issues in the design of three research instruments for measuring hospital service quality, patients' perceived severity of illness, and patient involvement have been discussed. Part II uses existing standardized instruments for measuring organizational culture and nursing role efficacy. Statistical tools were factor analysis, alpha reliability analysis, multiple regression, measures of central tendency, t-tests and ANOVA.

**REFERENCES**
